

SCIENCE OF MAN

DECEMBER 1961

75c

CHOCO INDIANS

EDUCATION OR
VANDALISM?

HEAD HUNTING



Improving the Value of Your Photographs

PHOTOGRAPHS MAY BE CLASSIFIED generally in two types: those purporting to be art, and those for scientific or record purposes. Those taken for art are complete in themselves; those for scientific purposes must include additional supporting information.

A photographer, for example, taking a picture of a model, does not care whether she is small or large, as long as she fits his needs and as long as the photograph turns out well. In fact, as long as there is nothing in the picture to compare the model with, no one can tell whether she is large or small.

On the other hand, separate photographs of two girls would mean little to a physical anthropologist unless there were some indicator in each of the two photographs to show that although the two girls appeared the same size in the respective photographs they were actually a great deal different.

Can you look at a photograph of a projectile point lying on the ground that you may have taken years ago, and tell whether it is a spear point or a bird point? You can't unless there is some other thing in the picture for comparison, or unless you happen to know there were certain differences of characteristics. Both a bird point and a spear point can be photographed the same size. The size of course depends on many factors — how close you were to it, the focal length of your lens, and how much the negative was enlarged in printing. Had you thought to put a ruler in the picture or a coin with a familiar picture on it, you would never have had any trouble telling whether the point was large or small. (SoM, October 1961, p. 192.)

One cardinal rule for all anthropological photographs is that some indicator of size must be shown. A corollary is that the scale or indicator must be at the same distance from the camera as the object of interest. If it is a printed scale, it must also be parallel to the object.

If you are going on an archeological "dig," take along an assortment of small scales or rulers, perhaps from three inches to a foot in length. If you happen to discover something unexpectedly and are unprepared, you may have a dime or some other coin in your pocket that will serve as a scale. (Ibid. p. 205, fig. 2.) If you always use the same trowel, it may serve as a scale in an emergency. Someone else using a different size trowel may misinterpret it, however.

You may have trouble with buildings or ruins. A surveyor's stadia rod is the best all-around measuring stick for large objects. A yardstick will also suffice for

buildings. If you are photographing ruins in a country using the metric system, however, will you ever be sure whether your picture shows a yardstick or a meter stick? Of course there are only a few inches difference and it may not be important. On the other hand it can be embarrassing if you get home from Mexico and discover you have forgotten to take one measurement (which at one time or another happens to all of us) and you can't tell from your photograph whether you used a meter stick or a yardstick.

Some people habitually pose somebody in their photographs of large objects, as a determinant of size. In photographs for scientific reports it is usually not considered good form to include a person in photographs. In some photographs it is permissible, though. In an emergency when I have to use someone as a scale indicator, I place that person to one side, so as not to obstruct any portion of the object. Then if I have to use the photograph in a report, I can draw in a scale computed from the person's height, and cut off his image. Or I take two identical pictures, one with the person and one without.

Direction

The direction in which an object is lying may be important. If so, it should be indicated in your photographs. For example, some groups buried their dead

in definite directions. The buildings of Monte Albán run in a definite direction while those of Yagul, a few miles away, run in a slightly different direction. An arrow, cut out of or painted on cardboard or Masonite, can be useful in indicating direction. If you can include the corner of a known building in your picture, that may also be used to recompute direction at a later date.

Many people use the archeologist's trowel as a direction indicator. It can then be used also to double as a relative measure for size. In using a trowel, though, you will have to decide whether to use the point or the handle to indicate north, and never change it. It could be disastrous to use the wrong end.

Relative Position

It is usually best to survey in a site if you can. This will give you an exact position to start from, and everything else in your site can be located from that known point. (Ibid. p. 210.) Many times, however, you may be in unsurveyed country, or too far from a bench mark. Then you may have to locate yourself from other immovable objects. Your photographs can also help locate your site or the specific artifacts if you have enough identifying features in them.

Before clearing a site for digging, don't forget to take several photographs of the area just as it is. This will give you a picture of the more prominent rocks, trees, cacti, etc. Perhaps you can also include a building in the distance. Then, as you clear off the surface, be sure

CONTINUED ON PAGE 32



Editorial Office Moves

As indicated on the masthead page (P. 3), the editorial office of SCIENCE OF MAN has been moved from Mentone, Calif., to Garden Grove, California. All mail formerly addressed to Box 643, Mentone, Calif., (manuscripts, letters to the editor, photographs, NALAC matters, etc.), henceforth should be addressed to:

Joseph E. Vincent, Editor
SCIENCE OF MAN
10421 Lampson Avenue
Garden Grove, California

DON MacLACHLAN
PUBLISHER

JOSEPH E. VINCENT
EDITOR

JACK E. SCHUNK
ADVERTISING MANAGER

DOROTHY DONALDSON
BUSINESS MANAGER

VIOLET ASPEGREN
CIRCULATION MANAGER

MABEL STERNS
EDITORIAL ASSISTANT

PAUL S. DIEHL
PRODUCTION MANAGER

EDITORIAL ADVISORY BOARD

PALEO-INDIAN

DR. GEORGE A. AGOGINO

Professor of Archaeology
University of Wyoming
Box 3254, University Station
Laramie, Wyoming

INTERAMERICAN RELATIONS

DR. CARL B. COMPTON

Director, Instituto Interamericano
5133 N.T.
Denton, Texas

POLYNESIA

DR. LOWELL D. HOLMES

Assistant Professor of Anthropology
University of Wichita
Wichita 14, Kansas

TYPOLGY

ARTHUR GEORGE SMITH

Curator of Archeology
Firelands Museum
Norwalk, Ohio

SCIENCE OF MAN will publish many articles which may be controversial. In such articles, the opinions and conclusions will be those of the author(s) and not necessarily those of the editors. SCIENCE OF MAN will attempt to deal impartially with all subjects. Comments from readers will be welcome and will be published if possible, within the limits of space and propriety. All comments must be signed and none will be published without the identification of the writer.

Contributions of articles, pictures and other editorial material are solicited. The pages of SCIENCE OF MAN are open to all contributors, professional, amateur or student. Every consideration will be given to papers submitted for publication. Unsuitable manuscripts and pictures cannot be returned unless accompanied by sufficient return postage.

OFFICIAL MAGAZINE

NATIONAL ASSOCIATION OF LOCAL ANTHROPOLOGY CLUBS

Joseph E. Vincent
Executive Secretary
10421 Lampson Avenue
Garden Grove, California

SCIENCE OF MAN

Vol. 2, No. 1

Whole No. 7

DECEMBER 1961

SCIENCE OF M A N

A MAGAZINE DEVOTED TO THE STORY OF MAN, HIS WORKS, AND HIS PAST AND TO THE POPULAR PRESENTATION OF THE FASCINATING STORY OF ARCHEOLOGY, ETHNOLOGY AND THE OTHER SCIENCES OF MAN.

EDITORIAL OFFICE: SCIENCE OF MAN, 10421 LAMPSON AVENUE, GARDEN GROVE, CALIFORNIA

CONTENTS

Improving the Value of Your Photographs	2
Head Shrinking in Ancient Mexico, by Howard Leigh	4
The Choco Indians: White Indians of Panama, by Neville A. Harte	8
Natives of the Marshall Islands: Kwajalein Atoll, by Gerald A. Smith	11
Melanesian Cults, by Robert C. Kiste	14
The Face in the Lava Flow, by Thomas Gerity	16
Petroglyphs in the Lava Mountains, by Mary Frances Berkholtz	18
Early Oceanic Migrations, by Dee F. Green, et al.	20
Special-Interest Group Program in Archeology for Grade School Level, by James R. Moriarty and Lambert T. Baker	24
Reprints from SCIENCE OF MAN	30
Maya Scholar Differs	33

DEPARTMENTS

Editorial: Wanton Vandalism	26
Anthropology Notes	
Asiatic Material	29
Chicago Natural History Museum Holds Open House	17
Tribal Areas in Montana in 1855	29
Archeology of Viet Nam	29
Head Deformation	30
New Archeology Hall Opens	30
Tut-Ankh-Amon's Treasures	30
Our Cover	32
Book Reviews	33
Surface Hunter, by George Arthur Smith	34
Ancient Tula and Toltecs	Back Cover

Copyright 1961 by Gemac Corporation

Head Shrinking in Ancient Mexico

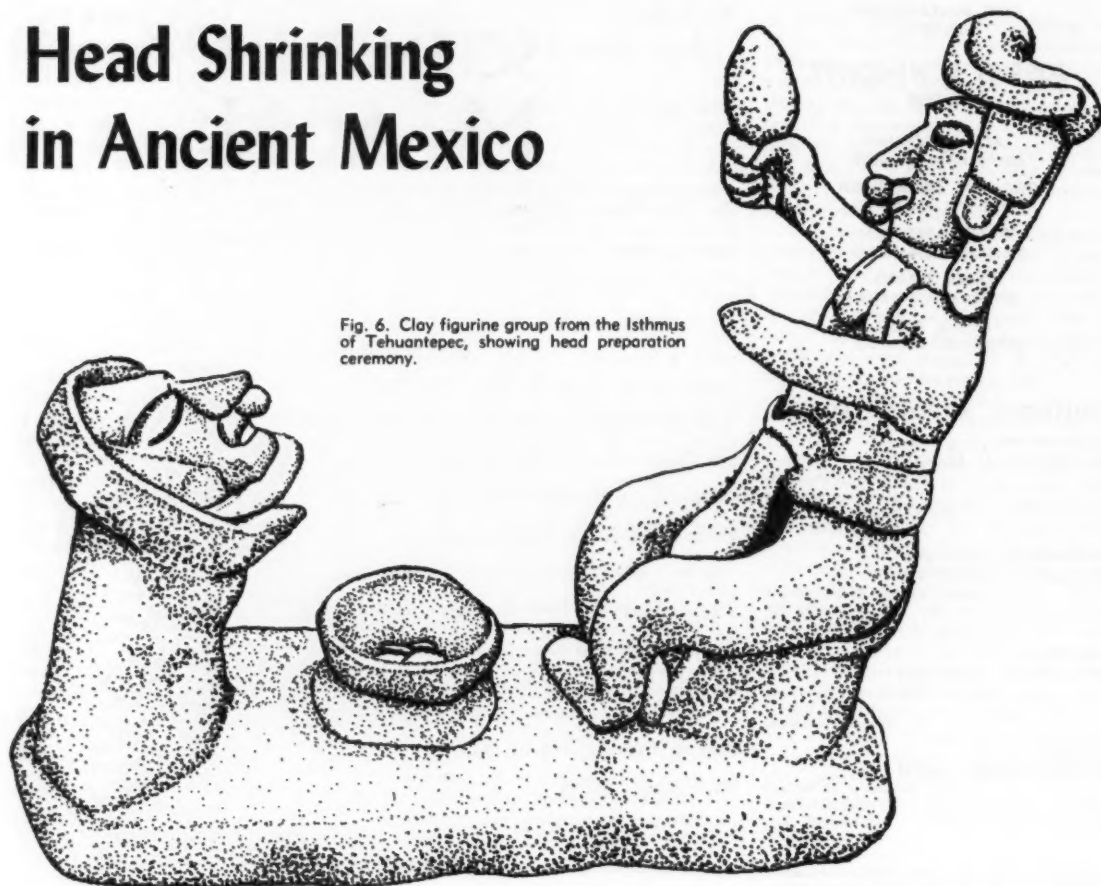


Fig. 6. Clay figurine group from the Isthmus of Tehuantepec, showing head preparation ceremony.

By Howard Leigh

THE WORLDWIDE FAME of the Jivaro Indians of northern Peru as head-shrinkers par excellence is doubtless justified not only because they have continued the practice into the 20th century, but because of the extreme refinement to which they developed the art. Very recently the Jivaro technique has been described and handsomely illustrated with color photographs in our de luxe magazines.

There is considerable evidence that head shrinking was practiced throughout a long period of time, from British Honduras to the Valley of Mexico. How much more extensive it may have been is not known.

The evidence presented here is of two kinds: first, the statements of two highly reputable 16th century Spaniards, Motolinia and Fray Juan de Cordova; second, the evidence of archeology. The first seems to have been passed over, and the

second has gone unrecognized for what it is.

The Franciscan, Fray Toribio de Benavente, better known as Motolinia, writing about 1540 says, "The heads of those they sacrificed, especially of those taken in war, they flayed, and if they were chiefs or prominent persons, they flayed them with their hair and dried them in order to keep them. Of these there were many at first; and if it were not that they had some whiskers, nobody would have judged them other than the heads of children of five to six years, and they were that way for being dried and cured."¹

I had read this passage of Motolinia long ago and completely forgotten it, but on the margin of the page I had written "head shrinking." Since I am not a prolific book marker, that note came to my attention recently while looking

for something else. By then I was completely aware of the practice by both the Zapotecs and the Maya. Motolinia, of course was writing for the Mexicans.

For some time past, my Zapotec student, Rubén Mendez of Mitla, had been making a series of drawings of ancient Zapotec costumes. For this purpose we examined hundreds of clay figurines in the Museo Frissell de Arte Zapoteco. We were somewhat mystified by the number of them which showed a small head with abundant hair streaming down, hung upside down from the neck of the personage

¹ All drawings by Ruben Mendez, except Fig. 6 which is by Augustin Villagra.

² "Las cabezas de los que sacrificaban, en especial de los tomados en guerra, desollabanlos, y si eran señores o principales personas los así presos, desollabanlos con sus cabellos y secabanlos para los guardar. De estos habia muchos al principio; y si no fuera porque tenian algunas barbas, nadie juzgara sino que eran rostros de niños de cinco a seis años, y causabale estar, como estaban, seco y curados."

Figs. 1 and 2. Clay figurines from the Valley of Oaxaca showing shrunken heads hung from the neck. Similar figures were found in August by Mexico City College archeologists in their excavation at Lambityeco near Tlacolula.



Fig. 1.



Fig. 2.



Fig. 3.

Fig. 3. Fragment from a large Zapotec urn, a shrunken head held by the hair with both hands. Monte Alban III, circa A.D. 500.



Fig. 10.



Fig. 7. Tablet of the Slaves, Palenque. Drawing by Augustín Villagra Caletí. This inscription bears a series of dates ranging from A.D. 615 to 782 according to the Goodman-Martínez-Thompson correlation, or A.D. 355 to 522 according to the Sponden correlation.

depicted. (Figs. 1 and 2.) These were obviously something quite different from the common representations of jade masks worn as pectoral ornaments on the Zapotec urns. The latter never show the hair and are worn right side up.

There are some urns and fragments of urns from the long third period of Monte Albán which show reduced heads held by abundant hair in one hand or both (Fig. 3). For some explanation of all

this, I searched the 16th century *Spanish-Zapotec Vocabulary* of the Dominican, Fray Juan de Cordova. Looking up the words for "decapitation" and "flaying," found there are a considerable number, but none were very helpful. Then I discovered, "Cabeza desollada el cuero lleno con que baylavan antiguamente" (head flayed, the skin stuffed, with which they danced in former times): *Petihui, pitihui, piteñequiqueni*. These archaic Zapotec words mean skin or leather of his head; the form in Mitla today would be *bitihuyéqueni*. This word form seems very significant, showing that the shrunken head did not become a thing apart from the person who was dead, but was spoken of as the skin of his head. The pronoun suffix *ni* could be replaced by the name of the person.

The codices Borgia and Fejervary-Mayer show dancing figures wearing a head hung from the neck, or held by the hair in one hand (Figs. 4 and 5). The Maya murals of Santa Rita, British Honduras, show a dancing figure with a head held by the hair in each hand.

Sometimes and by some other peoples decapitation was also practiced, as Motolinia has stated for the Mexicans. The famous Maya murals of Bonampak show a severed head which has not been flayed, lying at the feet of a fallen warrior.

It seems likely that in other cases the head was flayed without removal from

the body. The very important personage buried in the great stone sarcophagus at Palenque wore a precious jade mask, probably because his features had been removed by flaying the head for a very important purpose. That purpose seems to me to be suggested by the scene depicted on the great inscription stone at Palenque known as the "Tablet of the Slaves" (Fig. 6). Here is shown what seems to me to be the installation ceremony of a priestly ruler. On the left he is presented with a magnificent headdress of quetzal feathers, perhaps conveying to him temporal powers. On the right he is offered the stuffed head of his predecessor, perhaps conveying to him the magic powers of the deceased. If this is mere speculation it does not seem contrary to anything presently known.

Sir James Frazer has described the ceremonies of a West African tribe, the Abeskuta, whose principal men decapitated the dead king and presented the head to his successor. It became his fetish and he was obliged to pay it honors. In order to receive the magic powers of the deceased, he should eat of his flesh or in some cases his tongue.

A clay figurine group in the Museo Frissell de Arte Zapoteco, in Mitla (Fig. 7), and page 34 of the Maya Codex of Dresden (Fig. 8), show honors being paid to head-skins. Presumably the heads are being prepared, as copal incense is burned and music is played. In the figurine group a man shakes a rattle and sings. In the codex, three musicians play rattle, flute and pottery drum.

The purpose of head-shrinking doubtless varied greatly among the various peoples who practiced it. The noble motives of the Maya and the Maya and the Zapotecs who honored the heads, as suggested above, may have degenerated among other peoples to the extent that they were merely trophies. Such seems to be the case of the Jivaros to whom they eventually became valuable commercial items.

While Motolinía has said that the heads, which presumably he saw in the Valley of Mexico or in Tlaxcala, were the size of those of children of from five to six years, the figurines of the Zapotecs indicate that at times they may have been much smaller. (Cover picture and Fig. 9.) But it is to be doubted that the ancients of Mesoamerica ever achieved the refinement and the smallness of the Jivaro heads.

Howard Leigh

A Biographical Sketch

Howard Leigh went to Mexico many years ago as a young artist and became intrigued with the life there. For the past decade he has resided at the Museo Frissell de Arte Zapoteco, in Mitla, Oaxaca, Mexico, where he had the opportunity of studying not only the art objects and artifacts in the museum, but the Indians themselves in the neighboring villages. There, too, he had the opportunity to gather priceless works of the Zapotecs. His articles have appeared in the *Boletín de Estudios Oaxaqueños* of Mexico City College and of other scientific journals.

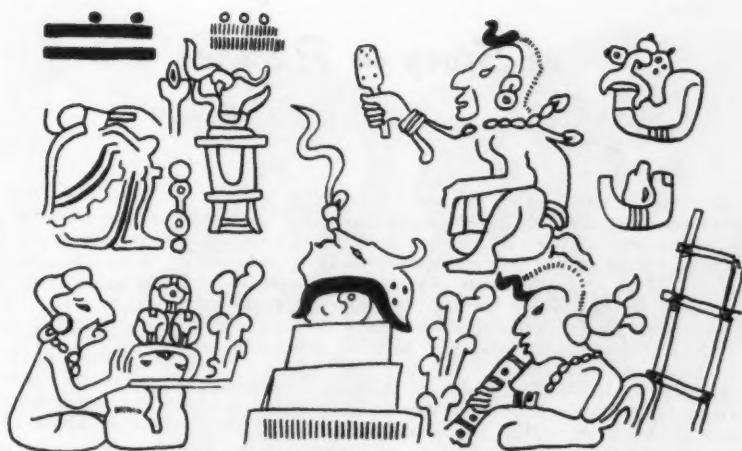
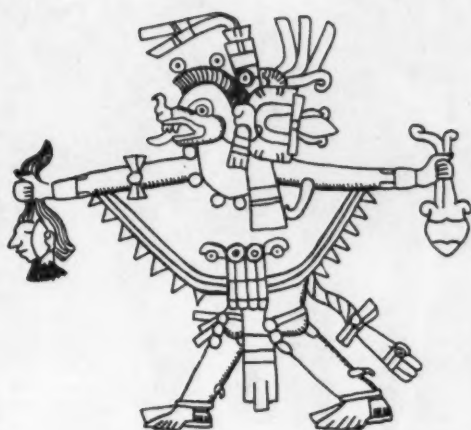




Fig. 6. Two of the sisters, at whose house we stayed, are 14 and 15 years of age.

Both girls are experts with the machete. The author has seen them throw a can of

beans into the air and then shear off the top as it falls without spilling a bean.

The Choco Indians: "White Indians" of Panama A Story in Pictures

Photographs by Neville A. Harte

MUCH HAS ALREADY BEEN SAID in technical and popular literature about the Choco Indians. Much has also been said in popular literature about "White Indians."

The Chocos are members of the Choco tribe, the best known tribe of the Choco group which inhabits northwest Colombia and a large region of Panama. Their language, Choco, seems to be an independent language not related to any other.

The Chocos are one of the few South American Indians which use pile dwellings. Their communal houses of thatch

sit on high poles or trees.

They are skillful canoeists. Their traders at one time used large canoes, seaworthy enough to travel far up and down the coasts. The Spanish Conquistadores first heard of the powerful, progressive nation in Peru through the Choco traders who knew both the Aztecs and the Incas.

At that time they were warlike but now are a very friendly, quiet people. They had an abundance of gold which they traded to the Chibchan tribes to the east.

They wore little or no clothing but now the women wear a saronglike garment below the waist.

Their blowguns, which they still use with poison arrows, are of the two-piece type.

Mr. Neville A. Harte, for many years an employee of the Army Engineers in Panama and a student and photographer of the native cultures, tells his story of the light skinned Chocos in pictures. His fine photographs speak for themselves. Ed.



Fig. 2. A Choco male — a little darker than the females.



Fig. 3. Three of our camp friends. They borrowed our tablecloth for this picture.

Fig. 1. Two young girls of the tribe. The difference in the color of the face and the body is due to a purple dye. The mistake should not be made of judging their skin color from the apparent darkness of the bodies in black and white photographs of these people. As in the case of many primitive peoples they dye their bodies for festive occasions. It is cheaper than the "civilized" custom of buying a new dress, and is just as ornamental.



Fig. 10. Many of the men of the tribe are handsome, but can be dangerous as well, if insulted. Due to the rapid entrance of oil companies, roads, planters, etc., this tribe will soon lose its identity, and the world will have lost one of its truly happy and pleasant peoples.

Fig. 5. These three sisters have dyed only the lower portion of the face. The dyeing of only half the face seems to be a peculiarity of these friendly people for as far as is known, no other group colors just half — the part below the mouth line. In the case of these three girls, the body is undyed and, were it not for the tropical sun, they would be no darker than the average American.





Fig. 9. Another good friend with whom we stayed three weeks. The family showed us many of the old arts and crafts.



Fig. 11. One of the last of the old blowgun makers. Native blowguns are being fast replaced by rifles, and the old craftsmen are turning to the making of ornaments and beads. Notice the elaborate ear rings and strings of beads on this veteran worker.



Fig. 8. Old methods are still in use, but old tools and carvings are getting quite rare. The tribe makes totem carvings though the practice is dying out. In this photo the wife grinds flour in an old stone metate with a stone mano, very similar to the practices of many native peoples of Mexico and our own American Indians.

Fig. 4. These so called White Indians of Panama are members of the Choco tribe. Actually the use of the word "white" refers to the skin coloring and not to the ethnic grouping, for the Indians are not Caucasoids. The Chocos are a wonderful people, friendly, kind, and full of fun. Note the light skin of the girl on the left. She would be even lighter were it not for continual exposure to a tropical sun.

Fig. 7. This woman grows jungle medicine herbs and brings them to the river for sale. The husband is a hunter and brings small wild birds and animals.



Natives of the Marshall Islands: Kwajalein Atoll

Part II

By Gerald A. Smith
San Bernardino County Museum

In the last issue, Dr. Smith described the geography and ecology of the Marshalls and of Micronesia in general, prior to discussing the people of the islands themselves. In the current issue, Dr. Smith continues his interesting article telling of the customs (ethnology) of the Marshallese.

Religious Beliefs

SINCE THE HEAD is the seat of the soul, the head and hair are sacred and should not be touched. Even the head of one's bed should not be touched by another person, and the rear or "head" of the hut should not be entered by a stranger.

As in the case of many native peoples, the religious beliefs of the Marshallese are a strange mixture of paganism seasoned with a little Christianity. When the soul leaves the body after death, it journeys to an afterworld which is thought by some to be situated on Knox

Atoll. Here there are no punishments for evil deeds on earth; the dead are invisible but enjoy every pleasure. This old belief has now been greatly modified by Christian influence, and some conviction has developed on punishments meted out to sinners in the afterlife. Punishment by God or by spirits in the hereafter is not greatly feared. Taking an oath means little to a native if it is administered in the name of God. Far more effective is to ask him to swear by the face of his son or daughter, or particularly by the face of his first-born child.

Formerly the natives believed in deified ancestors and local gods. These were thought to be human beings whose departed souls had taken the shape of a stone, tree, fish, or bird, and acted as guardian spirits to their descendants. For this reason certain stones, trees, and other objects were held to be sacred. On Aur there is a basalt stone, as high as a man, which no one is allowed to disturb. Namu, a similar basalt stone, is regarded as "the mother of all the tribes" and was formerly worshiped once a year with sacrifices and ceremonies. In addition, the natives believe in evil spirits who were thought to cause illnesses and injuries. For diagnosis and cure they resorted to medicine men.

Marshall Women

The Marshall people in general have skin color that ranges from light brown to dark chocolate brown. All hair is black and most of it straight, but occasionally wavy or curly hair is noticed. These people delight in pouring oil with a strong smell over their hair. The stronger the odor the better they like the oil. In general type they are much like the Polynesian people.

The women are from small to average in height. The old women either become very fat or just dry up. Their eyes are dark, their lips full, and their faces inclined to be round. Some of the eyes slant, the nose is medium broad. Their feet are spread, flat and large — they go barefooted.

Most of the women wear Mother Hubbard dresses, and these are of all colors and materials. On top of the hair is worn a headband of sea shells. Undershirts and "G.I." drawers are worn. The



Fig. 2. The coconut is the most important food item of the people of the Marshall Islands. Here a man climbs a tree with apparent ease. His skill can be appreciated only by one who has attempted to climb such a tree.



Fig. 3. In olden times prior to missionary contact, the people of the Marshall Islands wore grass skirts and woven mats for clothing.





Fig. 4. Lanrin, shown here with the author and some of the children, was the school teacher as well as the traveling missionary of Kwajalein Atoll. He was old and nearly blind. He taught the children Bible, singing, and a little reading, writing, arithmetic, and spelling.

women and girls are very modest and even little girls are reprimanded if they expose their legs when seated about the house.

The women are subservient to the men. They never stand in the presence of important persons. Those few women who received training in the mission schools are superior to their uneducated sisters. They have more poise, understand and speak a little English, have a

Fig. 5. Making thatch from the pandanus trees occupies much of the time of the women and girls.



better religious background, keep themselves cleaner and their homes neater. The Congregational missionaries and others deserve much credit for the work that has been done for these people.

The character of the Marshallese women varied as it does of people in any part of the world. Some of the women were virtuous, others not, according to our standards. Most of the native dances had been stopped by the Japanese during their period of occupation of the islands following the end of World War I, but we watched some of the dances still being practiced. They consisted of slow, simple steps. The dance started with a kind of shuffling march to the rhythm of singing, then broke into a whirl with waving of arms and slapping of hand against hip. This was repeated many times. It has been reported that the old dances stopped by the Japanese were symbolic and most suggestive.

The women do not have good singing voices. They are shrill and loud but not too unpleasant when blended with the men's voices. The women sometimes sing love songs to their men, but do not act possessive toward them. Many of the women give the appearance of being lazy, but then none of the people are overly ambitious. Some of the women spend all their time looking after their children whom they love dearly. Often a woman with only one child will spend more time fanning and washing her one baby than other women do who have several children. The women are never seen loving their men in the physical sense. They fondle the babies, shake hands with the chief or distinguished visitors, wave at their husbands, and laugh and talk with them.

The women can do skillful work with their hands. Weaving and sewing are their most accomplished skills. Beautiful mats are woven from pandanus and coconut leaves. Fans, baskets, trays and other articles are made with artistic patterns and designs woven in differently colored materials.

Marriage and Divorce

Marriage takes place at any time after puberty. In general, the natives marry at an early age. Missionary influence has operated to raise the age somewhat as we found the boys to be about 18 and the girls 16 at the time of their marriage. A girl is normally betrothed before puberty, but this custom is on the decline. Marriage is forbidden between all close relatives except cross-cousins and between members of the clan. Noble girls may not marry commoners, but a chief may take wives from any social class. Wherever possible, a chief selects his first wife from the upper class. Inter-marriage between natives and Japanese was rare, but some of the Japanese men had taken native women to live with them and work for them. Many children were

found resulting from this type of association.

Marriage arrangements may be made informally among the young people. First steps must be taken by the parents or elder brother or sister of the young man, however. They approach the girl's parents or elder siblings through an intermediary who merely makes a request for the girl. Her relatives discuss the matter and then reply to those of the youth through another intermediary. If the answer is favorable, an open and general discussion takes place, and all possible objections to the proposed union are raised. The wedding ritual itself is very simple, and there is no exchange of gifts or other transfer of property. The newly wedded couple usually resides for a time at the home of the groom's parents. Later they move into a home of their own, usually not far away.

Christians are married by the preachers or missionaries. In many cases those married may have children and may have lived together for several years before the Christian marriage takes place.

The levirate is practiced here. Upon the death of a chief, his brother usually takes his wives. The chief's first wife becomes the second principal wife of the brother and is not reduced to the status of co-wife. The practice of taking the sister of the first wife in case she dies is found also.

It is said that divorce is easily obtained, and that remarriage may take place immediately.

The line of descent is traced from the mother's, not the father's, side. The chief may have two sons and a daughter. His daughter's oldest son will become chief upon his death, and not the son of his son.

Childbearing

As soon as a woman finds that she is pregnant she gives up all heavy work and abstains from certain foods, such as octopus and coconut crab. As her time approaches, a small hut is built for her on the outskirts of the village. When labor pains commence she repairs to this hut, accompanied by her mother, her husband's mother, and any of her own or her husband's grandmothers. Normally no man may enter the birth hut, though the husband may come to his wife's assistance if the birth proves difficult.

Some of the islands now have medical practitioners (men) who help with childbirth. Professional midwives usually attend the delivery, and their methods, though crude, appear to be successful even in difficult cases.

The placenta and umbilical cord have a particular significance to the Marshallese, as they do to many other primitive people. Failure to follow the prescribed procedure, they believe would be disastrous. The cord is cut by the wo-

man's mother or the midwife, and the afterbirth buried far away at the bottom of a deep hole. The stump of the umbilical cord is tied with a short length of coconut-fibre string, and the baby is washed with fresh coconut oil. The woman then goes down to the sea to bathe.

The old practice was for the woman to remain in the birth hut for fifteen days. Each morning she would sit over a smoldering fire so the fumes and steam from burning leaves would penetrate her body. In order to safeguard and improve her milk supply, the mother confined herself to a diet of arrowroot, taro, and breadfruit. There was no official announcement of the birth and no naming ceremony. Usually a name of some famous clansman is chosen for the infant. On the fifteenth day the mother and child left the birth hut, and the child was ritually introduced to the community.

For three or four months the mother rests and her relatives do most of the work for her. She abstains from sexual relations with her husband for nearly one year, or until she no longer breast-feeds the baby. Usually the infant is fed coconut milk and soft coconut meat at about the age of two months. When the baby is of a certain age* a ceremony is performed and the child's hair is cut and visitors bring gifts of food and mats and other things for the child.

Marshall Children

Children are much the same all over the world. It is not until we become adult and change because of social pressure that people begin to think of themselves as superior to others.

The children of the Marshall Islanders, like children in other lands, enjoy playing games, eating candy, being liked by everyone, and usually dislike being given a bath by their mothers.

Little girls enjoy playing at weaving headbands and mats. They imitate their mothers in many ways. When it is wash day, the little girls get a small piece of waterproof canvas and a bucket of water and help with the washing of clothes. The washing is done with a small amount of water on a canvas. The clothes are placed in this and squeezed and soaped until they are clean. This method of washing saves water which is precious. A few girls have dolls to play with.

All the children love to sing and as they have good natural voices, the harmony is beautiful. Little children walk along the paths of the islands singing songs to themselves for their own entertainment. Most of them were very friendly and interested in us Americans, but some were very shy. This was especially true of little babies who would cling tightly to their mothers when we

*The ceremony I watched was for the chief's son when he was about one year old.

approached. Mothers sing lullabies to their babies to put them to sleep and to keep them from crying. The little babies were usually much lighter in color, but become darker as they grow older.

Adolescence

Adolescent children have been observed showing much interest in the opposite sex. One evening a boy of about fifteen was seen with his arm wrapped around a girl of approximately twelve. They would whisper together and giggle and seemed to like each other very much. The boy was quite fickle, because during the course of the evening he was observed with three different girls. Unmarried women and girls of fourteen and over have complete sexual freedom as there appeared to be no great social disapproval. Excessive promiscuity was not approved of, however. Promiscuous girls were not considered good risks as wives. One of the chief objectives of the boys was to seduce as many of the girls as possible, as parental control was very loose.

Girls, we were told, usually married at about the age of sixteen while boys were, as a rule, about two years older. Many times the boy and girl live together before they are married and may even have one or two children. This seemed to be no disgrace and the children born out of wedlock were loved just as much as the others.

All children are greatly loved, and never did we see them treated badly. They were never whipped, and very rare was the case where the mother even gave the child a slap on his seat when he was disobedient.

Boys of fifteen and older made good laborers and were employed by the Civil Affairs Officer. They received the same rate of pay as the older men. On their home islands these boys found little to do to keep them busy. Of course, there was some work to do such as helping with the copra, fishing, building houses, etc.

The reaction of the adolescent boys to the kissing scenes in the movies was interesting for they would yell and laugh and cover their face with their hands. Kissing is not practiced among these people. The same reaction occurred when the boys saw pictures in magazines. They thought the pictures of the American women were beautiful. Their reaction was "American women good — Marshall women no good."

Children's Games

The favorite game played by boys and young men is a form of kickball. A ball is made of rolls of pandanus leaves. The boys form a circle, the size of the circle depending on the number of players. The ball is put into play by a forward kick up into the air by one of the players. When the ball is in the air all players clap their hands three times. By that time the player nearest the falling ball must



Fig. 6. Three Marshallese men, dressed in the old style grass skirts, stand in front of an outrigger canoe.

give it a kick back into the air. A definite rhythm is thus established of clap, clap, clap and kick. The accomplished player always uses a backstroke with his leg. The ball is contacted with his heel or the side of his foot and is sent back over his head into the circle of play again.

Everyone enjoys swimming and the children, even the small ones, seem to be quite adept at the sport.

Children play a game much like our own hopscotch. (Fig. 13.) The area is drawn on the ground as shown in the picture. A small piece of coral rock is used and is tossed into the first square.

CONTINUED ON PAGE 28



Fig. 7. The houses of the Marshall Islands people are rectangular with thatched gable roofs. The walls are thatched on the exterior and sometimes lined with beautiful mats on the inside.

Fig. 8. Two boys on a small outrigger at Likiep Atoll.



Melanesian Cults

By Robert C. Kiste

Two articles on cargo cults were received almost simultaneously several months ago, one dealing exclusively with New Guinea and the other more generalized. Both were good but unillustrated and, unfortunately, both very much alike. The great number of other unillustrated articles received earlier has prevented publication of either article sooner.

*One of the two, this one by Robert C. Kiste of Indiana University, is published in this issue. The other, by David Beckerman, will follow in a few months.*Publication of one before the other was purely arbitrary and is not an indication of superiority of one over the other. Ed.*

EUROPEAN COLONIZATION has made a tremendous impact on primitive cultures all over the world. Unfortunately, many examples of cultures in the process of adjusting to the influences of western ideas have not been documented in a manner adequate to permit detailed analysis. Enough information may be salvaged, however, to permit drawing some general conclusions regarding what happens to the participants of disrupted cultures.

The purpose of this article is to describe briefly several of the results of European contact with Melanesia as it has affected the nature of the indigenous religious belief. One of the changes involved the development of various cults. One known to us as the "cargo cult" will be described later.

For a better understanding it is necessary to go into the background of the area. It is well to note that while the true cargo cults did not develop until 1913, the basic pattern for this and related movements was laid much earlier in Fiji, New Guinea, and Papua. [Beckerman, in his article, "Cargo Cults of New Guinea," which will appear soon in SoM, gives the period of World War II as the starting time of those cults in that island. Ed.]

Fiji

Initial European contact with the islands of the Fiji group was first made in 1643 by Tasman. The next hundred years witnessed infrequent contact, but by 1813 European economic activity had deeply influenced native culture. It was not until approximately fifty years later, however, that the first signs of cult development were apparent. Native unrest, stimulated by a religious cult, was noticed

in 1877, but it was in 1885 that officials of the British government in Fiji had cause for concern.

A cult known as the Tuka cult had developed in the regions somewhat removed from the center of European activity. A man named Ndugumoi who claimed to have miraculous and occult powers had emerged as a prophet. He prophesied that before long the order of the world would be reversed. The Whites were to become servants of the natives and native chiefs were to become inferior to commoners.

Ndugumoi had a mystical revelation that the ancestors were to return to Fiji, that the faithful members of the cult would enter a glorious paradise, and that the land and independence that the natives once enjoyed would be returned. Ndugumoi promised that youth would be restored to the aged, that island shops would be filled with material goods, and that there would be eternal life for those who followed his teachings. The fate that he predicted for the nonbelievers was not pleasant. They were to burn forever in some native version of hell. Government officials, missionaries, and traders were to be driven into the sea.

Ndugumoi recruited many followers and had lieutenants who traveled around spreading his message. Members of the cult drilled in military fashion. The cult grew into an elaborate organization, but when Ndugumoi set the date that the order of the world was to be reversed, government officials would tolerate no more. In fear of what might happen, the British arrested the prophet and several of his chief lieutenants. Ndugumoi was banished. Belief in the doctrines of the cult did not die and were revived from time to time by disciples of Ndugumoi. The cult did not come to an end until several years after World War I.

New Guinea

In 1912 a wave of prophetic movements was reported from New Guinea, particularly in northeast Papua. One of these was the Baigona movement which was led and initiated by a native by the name of Maine. He claimed that he had been killed by the snake Baigona; that the snake brought him back to life, taught him new doctrines, and sent him out to teach among his people.

The Baigona cult was chiefly concerned with magico-medical curative techniques. It had definite anti-White overtones. It

has been reported that Maine benefited greatly from selling his teachings and cult mysteries.

Some Baigona men were not content with practicing only techniques of a curative nature as they mixed sorcery with their medical activities. It was as a result of their practice of sorcery that they came into conflict with the colonial government. The government also objected to the extreme use the cult made of "possession-mechanisms" such as trances, fits, and speaking in "tongues."

Possession-mechanisms were used in at least one instance to avoid complying with the wishes of a government official. While disobeying the official's orders, a group of natives fell into epileptiform fits which functioned very well to mask their disobedience and resistance.

Even though the paramount concern of the cult was focused on traditional thought and action, there were definite manifestations of an underlying Black-White antagonism as evidenced above. It is important to note that it was only approximately fifteen years before the Baigona cult developed momentum that Whites penetrated into this area to exploit gold resources. As the White influx increased, as the gold prospectors were followed by government and missions, cults in this region of New Guinea developed with more frequency and more intensity.

Another cult which arose in New Guinea and was similar to the Baigona movement was the taro cult. It was first noted in 1914, attracted its greatest attention after 1919, and persisted until the late twenties. The Baigona cult was not particularly overt in its anti-White sentiments; the taro cult was even more passive.

It appears that both movements developed independently and that the roots of the taro cult are not to be found in the Baigona movement, but in a social situation of unrest which stimulated development of both movements. There were several subcults and sects within the taro movement. The cult was not marked by unity or cohesion. In general, the taro cult increased the importance of the intervention of spirits in human affairs and the need to pacify them with food offerings.

The leader of one of the manifestations of the taro cult was called Buninia. He claimed to have been struck down by the

spirit of the taro plant while he was working in his garden. After this incident, Buninia was possessed by the taro spirit and he went about the various villages announcing the event. Buninia said that it was revealed to him that the existing methods of cultivation were bad and should be abandoned. He announced a special ritual which was to be applied to gardening activities.

At first Buninia received little response. However, a young girl was struck down in one village by the spirit of the taro and she began to sing the songs that Buninia had established as being part of the ritual to be followed by cult participants. Similar cases occurred and those individuals whom the spirit had possessed began urging their chiefs to heed the message of the cult.

In November 1914, one European witnessed an event in which Buninia was the leader. Buninia was speaking "in tongues," young men were drumming, and one native after another became possessed by a shaking fit. While in a state of possession they received instructions concerning the planting of taro and general cult activity.

Transmission of these shaking fits was a collective type of phenomenon. Taro cult leaders could induce such "spiritual possession" at will, but for most participants in cult activity, possession seems to have been quite involuntary. Most probably they were psychologically predisposed to such behavior.

Taro cult activities included ritual sessions with singing and possession, curing spirit-caused diseases, magic spells to produce good crops, offerings to ancestors, and large feasts. Initiated cult members visited villages, told of their experiences, became possessed, and soon after there was usually a wave of spiritual possession in the village.

The taro cult was essentially peaceful in nature. There were various subcults and sects, but they were not antagonistic toward one another. They lived in an atmosphere of good fellowship with each other. They were united by common concern with the success of their agricultural activities. This attitude between members of the various elements of the cult served to break down the existence of hostile relationships which formerly characterized the social situation among villages in New Guinea.

On the one hand, the taro movement appeared to be only a revitalization movement if one noted only the increased concern directed toward the aboriginal activity of taro farming and spiritual intervention in human affairs. The important function of the taro cult was, however, this breakdown of the old inter-village social relationship, and the emergence of a new social order. The taro cult was a pan-tribal movement which was certainly a break from the past. One

must wonder just how much of the Pan-African nationalism, which is so prevalent today, arose under similar circumstances of religious cult development in response to western culture, only to change later into the present movements of a more political nature.

Vailala Madness and Other Cargo Cults

Now let us consider the Vailala madness which occurred in the Gulf Division of Papua, northwest of the Torres Strait. One of the central themes of this movement, which was first reported in 1919, was that the ancestors were to return on an ocean-going steamer laden with cargo, cargo in the sense of western material goods.

Possession in the form of fits, jabbering, and wild dancing played a great part in the madness. Again we find that individuals in leadership roles could induce self-possession and the followers were swept away involuntarily. The movement appeared wild and uncontrollable, but in actuality it was well organized. Leaders supposedly possessed great powers and were treated with proportionate respect. Such powers were used in curative and divinatory functions.

It appears that the original prophet of the madness was an old man named Evara. The story as told by his son was that Evara was hunting and had fallen into a trance. Natives from Evara's village searched for him for several days but failed to find him. The old man eventually found his own way home. He reported that a sorcerer had "ripped up his belly." Later, Evara was first seized by the madness. After a second seizure he reported it to the villages and the madness spread.

The point of excitement was not the fits themselves, but the revelations Evara experienced while in such a state. He prophesied the coming of a steamer which would bring the spirits of the deceased ancestors. The ancestors were to bring flour, rice, tobacco, rifles, and other goods. There was also present some vague idea of "Papua for the Papuans" (another point which reminds one of present-day Africa). It was revealed that imported goods really belonged to the native, that the Whites had been depriving them of what was rightfully theirs, and that it was necessary to drive the Whites out of Papua. It was also conceived that the returning ancestors would have white skins and that all natives would become white after death.

Later in the development of the madness, it was even prophesied that an airplane would be used to bring cargo to the native people. The amazing thing about this is that, at the time of the prophecy, no airplane had yet appeared over this part of New Guinea.

Whole villages were converted to belief in the arrival of the "cargo." Gardening was abandoned, trade with Europeans

ceased, natives employed by Europeans quit work and waited for the coming steamer. Needless to say, immediate conflict developed with European authorities. Their efforts were ineffective. Only after native disillusionment from the failure of the cargo ship to appear did things begin to return to normal. By 1923 the wild stage had passed, but belief still persisted and it was not until 1931 that the movement really died out.

There was a complete renunciation of the aboriginal culture with the madness. A strict emphasis on sexual morality in accord with Christian belief was prominent as the evils of adultery were stressed. Sunday was observed in a puritanical manner as cult leaders held prayer meetings and instructional services. In short, an attempt to adopt European customs accompanied the preoccupation with western material culture. The natives wanted the white man's possessions and they attempted to conform to the white man's ways. At the same time they believed that the white man was responsible for holding them back from achieving their goal.

The Vailala madness was just one example of movements throughout the Pacific which were focused on obtaining the material goods of European man. The general term, "cargo cults," has been applied to them.

The first clear specimen of this type of cult movement was the German Wislin movement of the Torres Strait which occurred in 1913. The prophet declared that the ancestors would come, bring manufactured cargo, and kill all Whites. Many other cargo cults developed in the Pacific. The cargo cults of Buka, which occurred in 1932 and 1933, even built storehouses to receive the cargo. While villages were destroyed during the reign of the Markham cargo cult in New Guinea during 1933.

Belshaw and Worsley have both stressed that the emergence of cults in the Pacific, particularly in Melanesia, has been due more to the social situation caused by European contact and disintegration of aboriginal culture than by contact between cults. Examination of the social contexts in which various cults have arisen reflects that there were certain social conditions present in each area where cults developed.

In each area where cult development was prominent, there was a widespread sense of frustration at not being able to obtain certain items of western material culture. Belshaw pointed out that native peoples who lived near centers of European activity and were included in this activity were not affected by such cult development. The same holds true for those native peoples who lived in areas too remote to be influenced by Europeans. The two extremes of native

CONTINUED ON PAGE 32

THE FACE IN THE LAVA FLOW

By Thomas Gerity

Oregon Archeological Society

IT WAS TEN YEARS AGO.

It was midsummer and the merciless New Mexico sun was at last slipping behind the broken remnants of lava that spilled down the slope above. We were heading in now, making our own road as I maneuvered the old truck among the vicious little cacti that dotted the flood plain. Now that we were in contact with the cushions, we felt suddenly cool in our own sweat, and completely exhausted.

At daylight we had taken an old trail from Highway 6 and had wound across the mesa. We worked the pickup through the rims and onto the Rio Puerco flood plain where the soil glowed red and even the tumbleweeds were sparsely scattered and alone.

After we left the car, we had found a few arrowpoints of a late Basket Maker type and many sherds of plain gray pottery. Among the rocks we had found acres of petroglyphs — row on row of pronghorns and mountain sheep, turkeys, geometric and stylized figures, hand and foot outlines. Once, in a very secret place, we had come upon a phallic sequence showing both male and female. Perhaps here, we thought, we had found evidence of an ancient love tryst.

Together Jenni and I climbed to what appeared to be a cave in the rocks. It was a cave of sorts. I wormed myself

in on my hands and knees and found a packrat nest loaded with cactus spines. There was evidence of man, too, for I found a broken bone projectile point and the low roof of the cave was thick with old smoke. It was up by the cave that we found the phallic petroglyphs.

Later we found the outlines of storage pits on a flat beneath the rims. Jenni found a section of a beautiful agate knife. We took pictures and made some sketches of the petroglyphs (Fig. 84).

As I drove I thought how I would tell my friends at the University about the site, and just how I would describe it. It was then, as we slowed and eased into a dry wash, that Jenni shouted and pointed to the rocks overhead.

I stopped the truck and looked up. For a minute I could see only shadows. But, as I lowered my eyes and searched the width of the flow just above us, I saw the face. It seemed suddenly to leap from the center of the flow. As we stared, it became impassive, serene, darkly aware, staring calmly back, surrounded by gaunt blocks of darkness. (Fig. 85.)

Once you saw the thing you couldn't look away. Or if you did, your eyes were drawn inevitably back and you stared into the face again. As we watched, it came to dominate the whole area, as though it always had, as though it always

would, as though it had been there before anything and would forever remain.

Finally we shook off the spell. It must be some trick of the broken light, some accidental alignment of shadows. We climbed out of the car, trying to keep our eye on the spot for fear it might suddenly disappear.

But it was real. We climbed up and looked. It was a huge block of basalt, carved by wind and sand and finished by a forgotten hand. It was a deep oval indentation that allowed all of the contours and flaws of the stone to stress the human features. The mouth was indistinct, perhaps nonexistent outside the shadows and the imagination of the beholder. Yet sometimes it seemed to be ludicrously smiling, at others merely impassive, a rough place in the stone. Apparently the whole effect depended upon the sun's angle. Only at this time of day would it stare from its dark socket in this compelling way.

The face was there in solid stone. We looked and touched it and were satisfied and went away.

We talked a lot about it in the next few days. We didn't have to apply to our friends at the University to know that the Indians of our region had rarely practiced massive sculpture, or that the technique was unknown elsewhere in the area. When we told others who weren't (as we were) recent converts to the Southwest, we sensed a certain reserve. That's why we quit telling it. Probably that's why we went back.

This time it was high noon on an autumn day. You could hardly tell it was autumn for there were no leaves to turn. But a cool wind was blowing and the lizards and insects were slower as they moved among the rocks.

We found the face easily. I think neither of us was sure we could. But it wasn't as impressive in the overhead sun. It appeared shy with its downcast eyes, and heavily comical, as though during the long dry centuries since the people went away it had just drowsed off. Was it a faint clownish grin the camera caught, or was it nothing more than a slight shadow? Even the second time we didn't examine it closely enough to know for sure. We put our daughter, Kate, in the hollow and took a picture. (Fig. 86.)



Fig. 84. We took pictures and made some sketches.

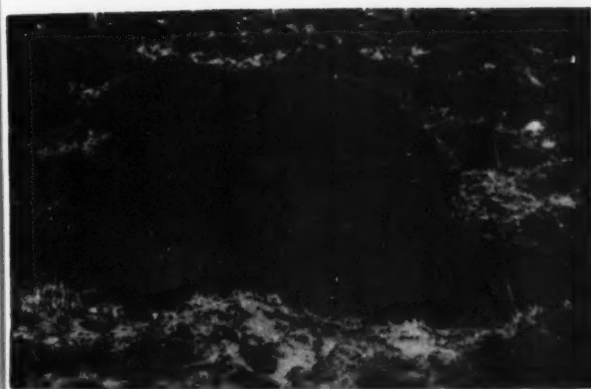


Fig. 85. Impassive, serene, darkly aware. . . .

Then we took some other shots and went on. Later, we showed the photos to friends at the University.

They were interested, particularly in the petroglyphs, since one picture showed a man using a spear thrower. (Fig. 87.) They were interested in the site, also, though I could never explain exactly where we had found the storage pits. And they were interested in the face, too, but they reminded us that such an occurrence would be unique. Had we actually noted tool marks on the face?

We looked at each other, abashed for being such amateurs. We knew now we had been too enthusiastic. We hadn't really examined the thing closely at all.

They asked us, too, if we would take a graduate student out who happened to be studying Anasazi sculpture. We said we would. I don't know whether we meant it, and the truth is I don't know whether they did, either. But it gave us a good way to end the interview and we took it.

And that was where we left the matter. We never went back and we don't live there anymore. But the face is still there. We know that, because it's too big to move. And I am going back some day.

It won't have changed much, either.

Chicago Natural History Museum Holds Open House

Chicago Natural History Museum's annual spring open house for its members on Friday evening, April 28, featured the opening of the new Hall of Polynesian and Micronesian Cultures. A series of special exhibits prepared by its scientific staff explained the research projects in which it was engaged.

The new Hall F (ground floor, east) displays a cultural panorama of the South Pacific: Hawaii, the Palaus, the Marquesas, the Carolines, the Society Islands, the Cooks and Australs, Easter Island, Samoa, Tonga, the Marshalls, Fijis, Gilberts, and New Zealand. It has been prepared under the direction of Dr. Roland

The bird lime may be on the left eye now instead of the right. And a tumbleweed may have lodged in the hollow of the rock. But it looks as it did before.

The face is there but the people are gone.

Tool marks? After twelve hundred



Fig. 86. We put Kate in the hollow. . . .

years of waiting, what do they matter, even to a god?

Fig. 87. One showed a man using a spear thrower (lower left).



Force, who was chosen in 1958 as one of Chicago's ten "outstanding young men" by the Junior Chamber of Commerce for securing the Fuller Collection of Pacific cultural materials for Chicago Natural History Museum. With the opening of Hall F, these specimens were placed on permanent display for the first time.

Museum members and their guests were welcomed that evening to the research laboratories and workshops of the Museum, where they saw a wide variety of special exhibits and demonstrations of work in progress. These included demonstrations of the art of making Chinese "rubbings," a collection of delightful Chinese hand puppets recently brought back from Taiwan (Formosa); rare and exotic primitive art, including

sculptures caricaturing European colonials; the botanical history of the colorful Scottish clan tartans; a new exhibit in preparation of the fossil skeleton of a 15-foot duck billed dinosaur; "Facts and Fancies About Abominable Snowmen" arranged by the first scientist to identify correctly the so called "yeti" scalp brought back from Nepal by the Sir Edmund Hillary Expedition; a display of the Museum's finest animal skins, with explanations of the tanning and mounting processes developed at the Museum; and a collection of rare 15th century scientific books.

The new Hall F has been featured in the Chicago Natural History Museum Bulletin of May 1961. The article, "A

CONTINUED ON PAGE 29



Fig. 88
(left)



Fig. 89
(right)

PETROGLYPHS IN THE LAVA MOUNTAINS

Text and Photos by Mary Frances Berkholz

"HAVE YOU EVER PHOTOGRAPHED the petroglyphs near the old steam well?" Ed Kirkland of Red Mountain asked me one evening as we were discussing, generally, this particular region of California's Great Mojave Desert. I not only hadn't photographed the petroglyphs, but was unaware they even existed. Ed promised to show them to me the very first day the wind didn't blow. This had been a particularly windy spring and I had learned from experience that neither tripods nor people can remain still in some of the gales the desert had been offering this year.

Like so many men who have spent a

great part of their lives on a certain section of the desert, Ed Kirkland knows the district around Randsburg, east to the bombing range, about as well as any living man. Be they Indian camp sites, petroglyphs, springs, mines, or rock collecting areas, Ed knows where they are located.

The Steam Well Road leads east from the Trona Road (see map) and goes up through a natural pass between the Lava Mountains and Red Mountain. Four miles from the paved road, bear left and follow around a hillock, continue to bear left past the steam well until you end up in a canyon. (Fig. 88.) The petroglyphs cover the basaltic outcrop at the top of the hill. (Fig. 89.)

The variety of the figures is rather remarkable and the large number of them indicates they were possibly done over a long period of time. In common with many other desert petroglyphs, these occur near an old spring. Metates, arrowheads, and potsherds have been found nearby so we may assume this was a former camp site.

Erosion and vandalism are playing havoc with this location. One section has been dynamited, and large boulders with petroglyphs have been carted off to grace someone's patio.

When you visit this area take time to look at the steam well. Originally drilled for water, it is instead an odorous vent. At one time local residents enjoyed steam baths for their various ills. Now, how-

ever, the decaying wreckage wrought by vandals has turned an interesting phenomenon into an unsightly mess.

More on Indian Writings

Two interesting publications have recently been received on Indian picture writings. Due to the apparent great interest in pictographs and petroglyphs indicated by the letters from our readers, the following information is given.

A. *Preliminary Report on Petroglyphs of the Republic of Panama*, by Neville A. Harte. The book is apparently the first of a series on the subject since we have also received a glossy photograph marked on the back for the second volume. The present volume is made up almost entirely of photographs — 112 illustrations to two pages of text in English, and two in Spanish. The petroglyphs all seem to have been chalked which accounts for their extreme clarity in the photographs. While many of the writings are similar in some respects to those of their North American cousins, a number of them bear striking resemblances to the current television program, "Camouflage," a maze of white lines in which one looks for familiar objects. With a little imagination, one can almost believe he sees the head of a Roman senator — Roman nose and all! (P. 56, upper.) The book, a paperback, is available from Neville A. Harte, Box 1132, Curundu, C. Z. No price is given.

B. *Indian Picture Writing of San*





Fig. 90
(left)

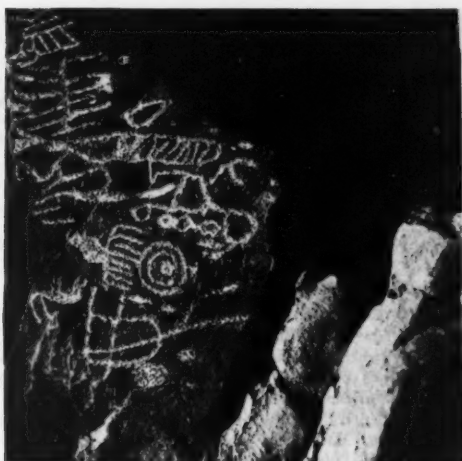


Fig. 91
(right)

Bernardino and Riverside Counties, by Gerald A. Smith and other members of the San Bernardino County Museum Association. This issue of the *Quarterly* of the Association (Vol. VIII, No. 3, Spring 1961) consists of 36 pages of textual material and illustrations covering most of the still existing picture writings of the two neighboring counties of Southern California. The text and the drawings are excellent and include a sketch map of the more important sites, a chart of anthropomorphic and zoomorphic designs, a chart showing distribution of the various types, and a list of reading references. The book is available for \$1.00 from the San Bernardino County Museum, Bloomington, California.

Besides the two books described above, the new issue of *The Masterkey* also contains an article of importance on Indian writings, "A Survey of Petroglyphs in Black Canyon," by Abraham Gruber. The article, about eight pages in length, is

well illustrated by drawings presumably by the author. Of interest is the fact that one of the petroglyphs described and drawn is the same one mentioned in the current editorial of *SoM*, the trail of mountain sheep. (Mr. Gruber's Fig. 1, p. 108, and *SoM* Fig. 1, elsewhere in this issue.) No mention is made, however, of the one that has gone astray. *The Masterkey* (Vol. XXXV, No. 3, July-September 1961) is available from the Southwest Museum, Highland Park, Los Angeles 42, California, for 65¢.

New Paleo Site in S.E. Michigan

A site producing several fluted points has been reported by the Aboriginal Research Club of Detroit. It appears to be an occupation site originally on the shores of an ancient bay left by glacial meltwater. The club is speculating on a date of c. 9000 B.P. The University of Michigan plans to excavate the entire site so

that by the end of summer we should know more.—*Interamerican*, June 1961.

Polychrome Zapotec Tomb Paintings

Excavations near San Pedro Yolo in the Sierra de Juarez, Oaxaca, have brought to light the first Mexican polychrome tomb paintings from the Historic Period. In family tombs below the house foundations were rectangular and slab-roofed. Each tomb contained from 2 to 8 adult burials showing dental mutilations, cranial deformations and one case of trepanation. The paintings were of three styles; one was geometric stepped frets, another showed deities in the style of the Mixtec codices, while the third had crude naturalistic representations of human figures, centipedes and the sun. Simple greyware bowls were the only offerings. *Current Anthropology*, V,2:3, June 1961, p. 296, and *Interamerican*, June 1961.



Fig. 92
(left)

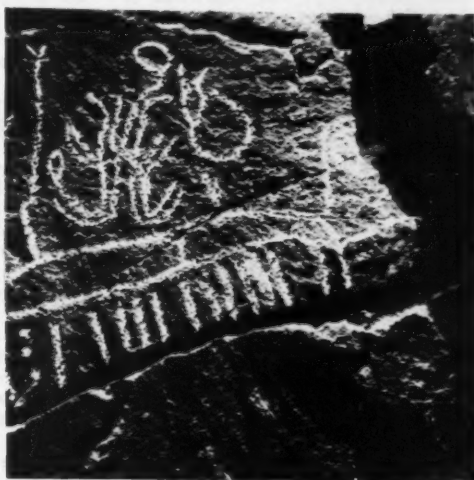


Fig. 93
(right)

Early Oceanic Migrations

By Dee F. Green, Ray T. Matheny, Carl Hugh Jones,
and Lawrence O. Anderson*

"THE QUESTION of transoceanic influence on the New World has been the subject of lively controversy for many years, and recent finds of many quite detailed cultural similarities between the hemispheres have reopened the question." With these words from the recent book by Julian H. Steward, *Native Peoples of South America*, we set the theme of this story. Indeed, the question has not only been reopened, but the seemingly impregnable dike of New World "independent inventionism" is receiving cracks that may soon be too large to fill with the fingers of traditionalism.

Weaknesses in the dike began appearing as early as 1896, when British anthropologist E. B. Tylor discussed the Aztec game of *patolli* and its striking similarities to the Hindu game of *parchisi* (*parcheesi*). Though this was an essay in method, the obvious question raised by these similarities could not be overlooked. This did not prevent independent inventionists, however, from ignoring the irritating parallel or consigning the game to the knapsack of some late land migrant from Siberia. To suggest transpacific migration as the explanation of such parallels between ancient America and the Old World was still heresy. A similar reaction greeted the several studies supporting transpacific diffusion that came from the pen of British Egyptologist G. Elliot Smith (e.g., *The Migrations of Early Culture*, 1915).

The debate received new impetus in 1947, when Harold S. Gladwin published his *Men Out of Asia*, and again in 1950, when Thor Heyerdahl followed with *Kon Tiki* — works arguing anew the possibility of ancient transpacific migrations. Although the migrations they suggested went in opposite directions, both rammed the dike of independent inventionism and the fight was on. The floodwaters of transpacific diffusionism have not yet engulfed Gladwin's "Dr. Phuddy Duddy," but a new generation of Americanists is taking a second look at the theory of independent invention and seriously considering diffusion not only via the Bering Strait but across the Pacific as well.

Another decade of study may or may not resolve the problem. Whatever the outcome, we still have a great deal more research ahead and without doubt a few

surprises. The more recent studies seem to point to a compromise solution, namely, that *both* independent invention and transpacific influence were factors in the origin of the American civilizations. They also support the possibility that ancient contacts by sea between the Americas and Asia or Oceania occurred in *both* directions. Some of these more recent studies are described here.

"Ancient Chinese American Contacts" is the name of a series of articles appearing in the Bulletin of the Institute of Ethnology, *Academia Sinica*, a Nationalist Chinese periodical dealing with ancient cultural contacts between Asia and America and the islands of the Pacific.

The first of these recent Chinese studies is by Ling Shun-sheng, in Bulletin No. 1, March 1956. Mr. Ling¹ opens his discussion by pointing out the new interest taken by Americanists in the possibility of cultural connections between Asia and precolumbian America. He cites the 118th meeting of the American Association for the Advancement of Science, Section H (anthropology and archeology), at Philadelphia, during which most of the papers dealt with the possibility of Asian and American transpacific contacts. He notes, however, that most Americanists still maintain the theory of the complete cultural isolation of the New World before Columbus, hence his interest in early navigation and cultural diffusion in the Pacific.

This article is a detailed comparative description of eastern (Asian) and western (American) rafts. His sources are ancient Chinese records of rafts encountered at sea and raft-building, and reports of early Spanish sailors of seagoing rafts encountered in the Pacific. The basic construction of eastern and western rafts is remarkably similar. The use of the adjustable centerboard for steering purposes is so unusual that it can hardly be considered an independent invention. The author states, "From the preliminary comparisons made above of the construction and function of the sailing raft in East Asia and South America, we are able to state that the rafts in these two regions were derived from a common origin."

Mr. Ling then goes on to analyze the

terminology for rafts in South America, Oceania, and China. Several similar terms for raft and sailing are found in Chinese and the languages of Oceania. The author feels that the terms originated in China because Chinese literature contains "the most ancient and important data." He quotes from Chinese records of the 5th century B.C., according to which military maneuvers were performed by rafts in the Yellow Sea at that early date.

In concluding his study, the author stands by the theory that the raft had an Asiatic origin. He quotes from still more ancient Chinese literature dating traditionally from the 33rd century B.C. to the 5th century B.C., recording sea movements by raft. Mr. Ling proposes that the ancient Chinese records answer the questions of Lothrop, Means, and Heyerdahl concerning the origin and diffusional problem of the raft in the Pacific. He believes that the raft was diffused by deep-water routes rather than by coastal waters.

In a second article entitled, "Human Figures with Protruding Tongue Found in the Prefecture, Formosa, and their Affinities Found in Other Pacific Areas," Mr. Ling deals with certain wood and stone carvings found in China, New Zealand, the Pacific Northwest, and South America, all of which show human figures with protruding tongues and, in some cases, only three fingers on the hands. He believes that these carvings are therefore additional evidence of transpacific diffusion.

Another article, "Rain Worship Among the Ancient Chinese and the Nahua-Maya Indians," is by Dennis Wing-sou Lou². In this study it is first noted that the principal Chinese rain deities were the horned dragon and the mysterious figure of *Lei-kung* or Lord of Thunder. Other rain deities were the frog, moon, and sun.

In ancient times the Chinese word for dragon was used interchangeably with snake and is found in the Oracle-bone

*Reedited from U.A.S. Newsletter No. 70 with permission, University Archaeological Society, Provo, Utah.

(1) "Ling" is the author's surname. Asiatic Chinese customarily place the surname first, followed by given names.

(2) Here "Lou" is the surname and is placed last, since this author has been "Americanized."

Inscriptions dating to the 17th century B.C. In these oracles, sacrifices were made to the dragon or snake deity for rain. There is a legend of twin snake deities, *Fu Hsi* and *Nu Wa*, who were the creators of the Chinese. According to early literature, most of the rulers were born of a dragon or under the influence of it.

Four dragons were associated with the four quarters of the earth and the four seasons. One of these dragons represented spring and the east, and was the rain deity in power. This dragon was blue or green and was associated with wood. The southern dragon, or red dragon, represented summer and was related to fire. The autumn dragon was that of the west; it was related to the color white, and was associated with metal or gold. The winter dragon was under the leadership of the "mountain dragon" which was related to the earth and the color yellow.

These dragons were compounded and variable; they could represent a single deity, or four or five deities. The ability of the dragon to change its role and dimension indicates a central omnipotent deity over the entire Chinese pantheon.

The author points out the similarities between the dragon or serpent rain god of the ancient Chinese and the serpent rain god of the ancient peoples of Mexico and Central America. He quotes from Quiche Maya myths in which the serpent, the god of rain, thunder, and lightning, is involved as one of the creators of the earth. He also cites the Mixtec legend of the puma-snake and jaguar-snake deities who brought forth two sons, one of whom took the form of an eagle, and the other the form of a flying ser-

pent. Mr. Lou believes that the Mexican feathered serpent (often depicted in carvings and given the title *Quetzalcoatl*) is very similar to the Chinese dragon, except the horns which the feathers replace. He says that the Mexican serpent represents a multiple god who was called "Lord of the Four Winds" or "Four-time Lord," which symbolizes the four elements, water, air, earth, and fire, and/or the four seasons.

In summary, the author compares the similarities between the ancient Chinese dragon and the ancient Maya serpent. "Both the dragon and the serpent were the principal and most ancient deities of the two cultures. They were similar in form, and were both included in the legend of creation, in which they were regarded as creators or makers. The dragon and the serpent could both be a single deity, or four, or many. Moreover, both the dragon and the serpent were related to the four quarters and the four seasons. When they appeared as four in number, each of them was related to a particular element and was represented by a different color. Finally, the dragons and serpents of the four quarters seemed to be connected with a central force, which was possibly another important deity."

The most striking example of similarities is that between the personified rain god of the Chinese, called *Lei-kung* or *Lord of Thunder*, and the personified rain god of the Mayas most commonly known as *Chac*.

The Chinese rain deity was portrayed in various forms often associated with the dragon or snake. One peculiar form was a serpentine body with an elephant's head. The author says the term *Lei-*

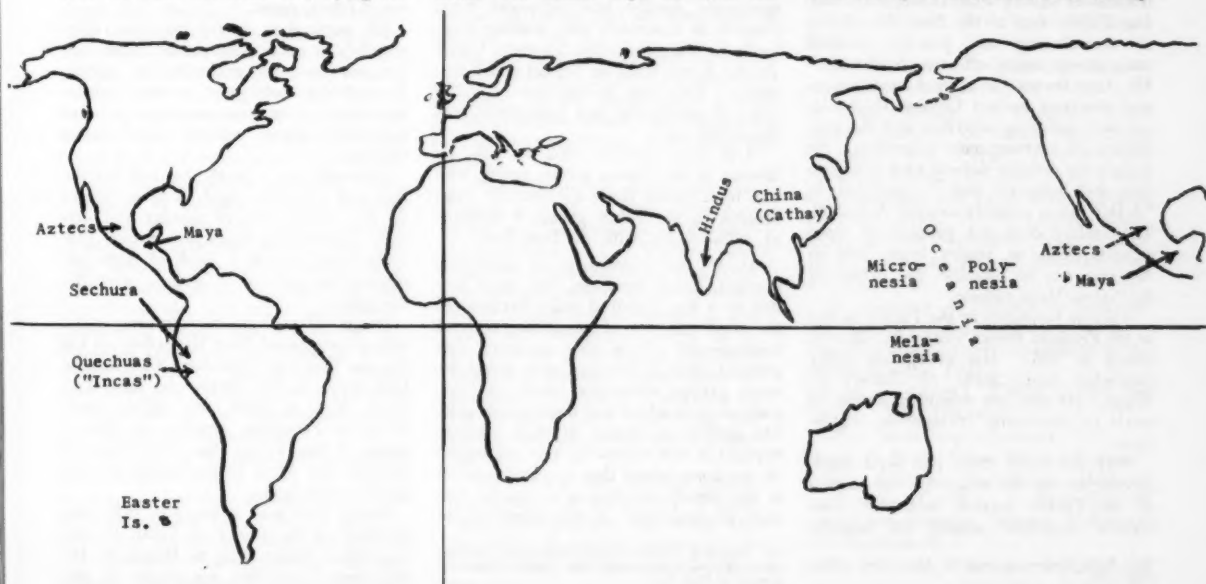
kung is a collective one for all the rain gods or gods of thunder. The *Lord of Thunder* was not a single deity, "but four or five, guarding the center and the four quarters of Heaven." The *Lord of Thunder* was also associated with the four seasons, four elements, and four colors. "He was pictured as riding on dragons and was regarded as an agricultural god as well as an ancestor or creator." He was also shown "holding an ax, a chisel, or a torchlike thunderbolt."

The great rain god of the Mayas, *Chac*, is generally known as god B of the *Codices*. He is shown with a long nose, two curving fangs or tongues, a knotted headdress, and often "holds in his hand an ax, or a torchlike thunderbolt, or both . . . *Chac* was believed to have a human head with a serpentine body as well as an elephant's head with a serpentine body."

Chac was associated with the four quarters, had a different name and color for each quarter or cardinal direction, and ruled over the four elements of water, air, earth, and fire.

The author points out the similarities between *Chac* and the Feathered Serpent representing *Kukulcán* (*Quetzalcoatl*), and the fact that many scholars believe that *Chac* and *Kukulcán* are the same deity in different forms and under different names.

Another similarity is between the deities *Lei-kung* and *Chac* in their relationship to the S and ⊕ symbols. The *Li* people, who were worshipers of the thunder and snake god as their ancestor, used S, ⊕, or ⊗ as a symbol for their god. Lou says, "This symbol is identical with the ⊗ of the Oracle-bone Inscript-



tions . . . and it is an early form of the modern Chinese word 申, which meant 'god' in ancient times, and from this word 申, the modern word for god (示申) is derived." He further says that the S-sign is closely connected with the cross sign 田 or 十. The modern Chinese words for thunder and lightning are derived from these symbols and include the symbol for god.

Mr. Lou says that the S-sign had great significance in the Americas, and quotes from Zelia Nuttall: "In the Dresden Codex, of Maya origin, there is an extremely important page on which the S-sign occurs in connection with twin deities, besides rain and cross symbols." The twin deities are identified as the Maya rain god Chac, in a rare dual form associated with the Kin sign or cross.

Next, Mr. Lou presents a strong argument that the ancient Chinese and the Maya and Nahua Indians had similar governmental institutions in which the lands, and even cities, were divided into four equal parts. The four parts represented the four quarters of the earth and were given symbols corresponding to the four cardinal points and elements. He maintains that these similarities are not merely accidental.

In conclusion, the author believes that the parallels between the widely separated Chinese and Mesoamerican civilizations must have been brought about in one of the following ways: "1. The ancestors of the Maya, and possibly the Nahua as well, may have lived side by side with the rain-worshipping Chinese in ancient China. 2. The cultural traits adapted by the Maya and the Nahua may have been brought from Southeast Asia or China to America, not by a few individual traders or sailors who, through mishap, found their way to the New World, but by several large and possibly planned emigrations under effective leadership." Mr. Lou favors the second explanation, and discusses ancient Chinese shipbuilding and seafaring activities and the possibility of a transpacific migration. He assigns no definite date to such a migration, but suggests that it occurred in "A.D." times, possibly around A.D. 500. The author does not propose to trace cultural flows or routes from Asia to America nor to establish the origin of the Nahua-Maya culture.

Ancient Voyagers in the Pacific is one of the Penguin Books written by Andrew Sharp in 1957. His viewpoints differ somewhat from those of Robert C. Suggs,* yet they are definitely worthy of merit in discussing transpacific migrations.

Over the years there has been much speculation on the origin of the peoples of the Pacific Islands and how they became dispersed among the Islands.

Andrew Sharp, a scholar and statesman of New Zealand, has in this book brought to the forefront the theories of Cook and other early explorers and missionaries concerning ancient interisland contact. He adds his own views of the place of origin of the Polynesians and the nature of interisland voyages.

The entire book supports the hypothesis that the spread of people among the Pacific Islands was the result of *accidental voyages*. The following additional conclusions are reached: (1) the original starting point was in the west and most of the movements were eastward, but some voyagers were carried in other directions; (2) the only planned voyages were made to islands of the same group or to those of neighboring groups — the main areas of intergroup contact being Fiji-Tonga-Somoa and Tahiti-Tuamotu; and (3) there were canoes carrying members of both sexes on these off-shore cruises that were blown off course, or families of exiles who were carried to new islands and stayed to colonize them.

Sharp believes that the original voyagers found their way to the islands of western Polynesia by accident, and that the eastward movement was continued by accidental voyages. After an island to the east was populated, accidental voyages continued between the original islands and new islands in both directions.

Below are two of Sharp's examples of accidental voyages of Pacific Islanders, taken from Gill, an early missionary. "The most significant of Gill's reports is the following, because it was from west to east and bridged the gap from the western islands to the Cooks. Fakaofu is an island about 300 miles north of Samoa. In January 1858, says Gill, a numerous family was conveyed from Fakaofu in a westerly gale, coming eventually to Mangaia in the Southern Cooks via the desert atolls of Nassau and Palmerston. This was a distance of 1,250 miles in which the east component was about 700 miles.

"Gill says that in 1862 he saw on Manua, in the Samoa group, people who had been blown there accidentally from Moorea in the Tahiti group, a distance of 1,250 miles, with no lives lost."

As to the possibility of deliberate voyages, Sharp feels that they were limited to a few hundred miles because of the great difficulty of navigating without instruments.* It is also apparent that planned offshore voyages were made between groups where the winds and currents were steadiest and most predictable. The general procedure in these offshore voyages is now to line up two landmarks on the home island that are said to point to the island one desires to reach. The start is made late in the afternoon so

that when the home island is nearly out of sight the stars will be out and the pilot can guide his course by them. If it becomes stormy the pilot can only guide his craft by the direction of the wind and the waves, and he may soon be lost at sea and thus become one of the accidental voyagers who may or may not see land again. If, on the other hand, the weather holds good, he may reach his destination in two or three days, and when the wind changes and blows toward his home island he may return.

Sharp's book is one of the best on Pacific voyagers, and provides a sound basis for the study of cultural diffusion in the Central Pacific.

In the field of early American Polynesian contacts, the book *Aku-Aku* is worthy of consideration although many scoff at Thor Heyerdahl's work.

This Book of the Month Club selection is an account of the first scientific archeological work ever done on Easter Island. Three American archeologists accompanied the author on a fascinating expedition that combined archeology, ethnology, and an extra dose of adventure.

Although written for the general reader, in the entertaining Heyerdahl style, the book contains much of serious archeological interest for both layman and scholar. Handsome photographs, all in color, add greatly to the interest of the narrative.

The volume is cleverly written and Heyerdahl as the central figure, manages to participate in all the important action without making himself obnoxious to the reader. He succeeds in gaining the confidence of the natives to the point that they bring him sacred "cave stones" and finally admit him to some of their secret family caves.

Of particular interest are the close parallels to ancient Peruvian culture uncovered by the archeologists' spade. Heyerdahl's east-to-west oceanic migration theory may now command a more respected place among Americanist scholars.

Although not a work destined for the standard reference shelf, it is a "must" on the reading list of scholar and layman. Its exciting pages demonstrate that archeology is still a field of high adventure as well as a serious scientific discipline.

Bengt Danielson, an anthropologist who accompanied Thor Heyerdahl on his famous Kon-Tiki trip, later had success both ways in raft travel. In his book, *From Raft to Raft*, the author, now living in Polynesia, reports the adventures of the Tahiti Nui expedition as told him by Alain Brun, one of the expedition members.

Tahiti Nui was a bamboo raft constructed on the island of Tahiti by the expedition leader, Eric de Bisschop. He felt that a possible sea route to the

*See Book Review, *Science of Man*, June 1961, page 139.

*Dr. Lowell B. Holmes' description of the navigations of the Polynesians will appear soon in *Science of Man*. Ed.

American continent between 30 and 40 degrees south latitude was used anciently despite the objections of some that the route was too stormy. The expedition left Tahiti on November 8, 1956, but the raft sank off the coast of Chile on May 26, 1957. The crew was taken to the port of Constitución, Chile, by the Chilean freighter Baquedano where they made preparations for a return trip.

Tahiti Nui II was built of cypress logs and was ready for sailing on February 15, 1958. The expedition sailed up the Chilean coast to the port of Callao, from which the Kon-Tiki also put out to sea, and then out into the Pacific. Tahiti Nui II drifted somewhat north of Heyerdahl's route and succeeded in traveling several hundred miles farther into the Pacific Islands than did the Kon Tiki.

The following quotation explains de Bisschop's theory: "I quite agree with him (Thor Heyerdahl) that there are many identical artifacts and customs, not to say plants in South America and in the Polynesian islands. But when it comes to explaining these similarities we do not agree. According to Thor Heyerdahl they exist because the first immigrants into Polynesia were a fair-skinned people from Peru, who sailed across the Pacific on Balsa rafts and settled in the islands about fifteen hundred years ago. I, on the contrary . . . have come to the conclusion that the similarities are due to the fact that Polynesian sea-dogs repeatedly made the long voyage to South America and back in prehistoric times and thus both influenced and were influenced by different Indian tribes."

The most significant contributions of de Bisschop's expedition are: (1) he shows that, despite the storms, it is possible to reach South America from Polynesia between 30 and 40 degrees south latitude, and (2) he demonstrates that a bamboo raft can float that far. Eric de Bisschop has answered two of the most serious objections to prehistoric ocean travel from Polynesia to the New World.

John L. Sorensen's master's thesis, *Evidences of Cultural Contacts between Polynesia and America in Precolumbian Times*, is an excellent outline of the possible fields of research in the problem of transpacific migration. In it he outlines the development of the independent-inventionist school and that of the diffusionists regarding the origin of Polynesian culture. Of interest is the discussion on page 7, of the recent rise of such contributions to the diffusionist school as Thor Heyerdahl's works.

Also found in the introductory portion is a statement setting forth the criteria for establishing cultural contacts between the Americas and Polynesia. On page 11 the author points out a final caution that "The relative incompleteness of the sources must necessarily limit the scope

of our conclusions."

The bulk of the evidence presented for possible east-to-west contacts is based on certain cultural similarities correlated with lexical correspondences. One example is the tetrapod vessel. Present in ancient America, the same type of vessel in Polynesia bears the name *kumete*, which is also found, with modifications, in Maya, Nahuatl, and Hokan.

Other related examples are his comparisons of the Polynesian god, *Hina* or *Sina*, and other religious traits with the Mesoamerican god, Quetzalcoatl, "Tree of Life" symbols, wooden funerary statues, and the rite of "the turning of the mat."

Mr. Sorensen concludes that there are enough positive evidences to show that, "complex cultural and ethnic movements between Polynesia and the Americas have taken place in the eastern Pacific basin in the last few millennia." He continues: "Based on the view that diverse cultural influences would have reached Polynesia from a center such as Ecuador, we propose that actual voyages . . . carried American physical types and cultural elements to eastern Polynesia. There the 'Polynesian' culture developed as a result of mixture between the new elements from America . . . many of which came from high cultures . . . and an old 'basic oceanic' population and culture. The differentiation between eastern and western Polynesian would perhaps be due to differing degrees and times of admixture, plus consequent regional developments."

"At least one more voyage from America seems necessary to complete the picture. This must reach Hawaii from North America. Possible sources for this voyage are the Northwest coast, south-central California, and the west coast of Mexico."

One more interesting article is "Sailing Rafts of Sechura: History and Problems of Origin" in the *Southwestern Journal of Anthropology*, which demonstrates the existence of present-day centerboard sailing rafts.

The accounts of experienced seafaring men of the past three centuries and observations of the sailing qualities of the Sechura rafts have led to the conclusion that large centerboard sailing rafts were capable of long distance voyaging, and were not inherently limited as to direction by geographical factors of wind and current. Final proof of windward capability is manifest in the Sechura rafts, employing the ancient methods of centerboard navigation.

We may also find, through further examination of the history of these rafts, that we have underrated the capability of ancient seafaring folk to make long voyages in such primitive craft.

In studying a subject such as this with culture traits as our only evidence much care must be exercised to prevent improper conclusions, yet at the same time one must not disregard the cultural similarities.

At one time someone who had little else to do proved that Jesus Christ and Buddha were one and the same on the basis of similarities alone. This of course is absurd, and this we must never permit ourselves to do.

We must study similarities, yet we must study them with a jaundiced eye, making sure that all conclusions reached on the basis of similarities are also logical from the standpoint of time and space and reason.

Further Reading

On evidence of ancient transpacific migration from eastern Asia to America: Gordon F. Ekholm, "Is American Indian Culture Asiatic?" *Natural History*, Vol. 59, No. 8 (October, 1950), pp. 344-351, 382.

Robert von Heine-Geldern and Gordon F. Ekholm, "Significant Parallels in the Symbolic Arts of Southern Asia and Middle America," in Sol Tax, ed., *The Civilizations of Ancient America*, Chicago, 1951, pp. 299-309.

George F. Carter, "Plants Across the Pacific," in *Asia and North America, Transpacific Contacts (American Antiquity)*, Vol. 18, No. 3, Pt. 2, January 1953), pp. 62-71.

Gordon F. Ekholm, "A Possible Focus of Asiatic Influence in the Late Classic Cultures of Mesoamerica," *ibid.*, pp. 72-89.

Miguel Covarrubias, in id., *The Eagle, the Jaguar, and the Serpent; Indian Art of the Americas*, New York, 1954, pp. 23-68.

On evidence of ancient transoceanic migration from western Asia to America: M. Wells Jakeman, *The Complex "Tree-of-Life" Carving on Izapa Stela 5; a Reanalysis and Partial Interpretation* (Brigham Young University, Publications in Archaeology and Early History, Mesoamerican Series, No. 4), Provo, Utah, 1958. (Several Near-Easternlike elements discovered in an ancient Mesoamerican sculpture.)

On evidence of ancient transpacific migration from America to Polynesia: Thor Heyerdahl, *American Indians in the Pacific*, London, 1952.

George F. Carter, "Plants Across the Pacific," 1953 (see above).

Other interesting references:

David H. Kelly, "Our Brother Coyote." Unpub., doctoral dissertation, Harvard University. (Contains a discussion of special relationships between Polynesia and Mesoamerica.)

David H. Kelly, "Calendar Animals and

CONTINUED ON PAGE 25



Special-Interest Group Program In Archeology for Grade School Level

By James R. Moriarty and Lambert T. Baker*

THIS IS NOT A STORY OF NICE PEOPLE trying to do nice things for children in order to keep them off the streets. Nor is it a story of children having a good time. It is a deeply significant educational activity being conducted by the Rancho Santa Fe School District, Rancho Santa Fe, California, one which mirrors this District's educational philosophy. Such a philosophy says, very simply, that curiosity is the major impetus to learning. Continually stimulate a child's curiosity and an atmosphere which compels learning is formed. Give him the basic tools, reading, writing, arithmetic, etc., but *don't* forget to give him the raw material upon which to practice so that he may use his tools with every increasing skill and proficiency. Such raw material should come from something which excites his imagination and challenges his reasoning ability — something that makes him dream. Then he, himself, will want

to learn — he will grasp for something beyond him that is exciting and thought-provoking, reach it, and then grasp farther.

Take advantage of his imagination and when his generation reaches adulthood, the stars won't be so far away. Teach him by rote, give him all the answers, make him memorize and mimic like a parrot, have him do things "by the numbers," and this thing called curiosity, or imagination if you will, will atrophy and the stars — well, who cares about the stars anyway?

The archeology class described by these pictures is an example of the kind of activity conducted by this public school district as it attempts to put into effect its stated philosophy. It is part of a much larger program, extracurricular in nature and known as the Special Interest Group program. Other classes are being held in the fields of paleontology, archi-

teature, ancient history, electronics, rocketry, creative writing, government, and advanced mathematics.

All fourth, fifth, and sixth grade children have the right to participate — the only requirement being interest. Parents in the community know that they are to have nothing to do with the child's decision to enter or not to enter one of the classes. This is a decision he must make by himself. Since all courses are held after school, on Saturdays, or during summer vacation, he has to determine whether he is interested enough in the offering to give up other things he likes to do, in order to enroll.

Incidentally, there are no grades or class rankings given. District staff members and parents bend over backward

*Mr. Moriarty is a faculty member of the Scripps Institution of Oceanography at La Jolla, California, and Mr. Baker is superintendent of Rancho Santa Fe School District, Rancho Santa Fe, California.

to make sure that children feel no pressure to attend. If the child comes, he comes because he wants to. *Ninety-two per cent of all children from the designated grades participate regularly in this Special Interest Group program now in its second year of operation.* This figure is important only because it shows that the philosophy stated above is not far from the mark.

Let's take a look at the archeology activity. What is more exciting to a child than to dream about the past? Countless children's books and magazines based on prehistorical periods are on the market today. Why? Because children's imaginations are fired by them. Dinosaurs, strange swimming creatures, exotic forests, ancient civilizations — children read or hear about them. Put reality into the dream by letting children actually investigate these things which they read and hear about, which are so awe-inspiring to them. Let them actually retrieve from the dust the artifacts of prehistory, and you have an almost sublime learning environment. You can't stop them from *really* using those basic skills which we all know are so important to their futures. Their curiosities make it almost mandatory for them to do so, and by such use they consistently improve their proficiency at these skills.

As a guide, give them a professional archeologist who is deeply dedicated to his calling, and they will understand what archeology means. These children will never become "pot hunters" — they will know and understand the discipline of archeology and will act accordingly. They

will know from first-hand experience how to saddle the inquiring mind, disciplining it so that the fruits of its labor will be of worth to man's future.

The experiences which these children have had in this special interest group are not designed to make electronic engineers, paleontologists, or archeologists out of them. These various areas simply provide the means by which a young mind can reach farther than the four walls of his classroom, his state textbooks, or the lectures of his teacher. They let him reach into his personal unknown, and by using his skills, reveal that unknown, only to find himself reaching again into another unknown. Of such stuff is man's progress made.

It is perfectly obvious that no professional archeologist would turn a group of children, or, indeed, of adults with no training, loose on an archeological site. The destruction of historical monuments in this country by untrained amateurs and curiosity seekers has been enormous. This destruction has caused a loss of significant data to such an extent that it cannot be evaluated. When this program was first suggested all of these aspects were taken into consideration.

The area near La Jolla, California, has been under intensive archeological investigation for the last five years. In the course of the field reconnaissance, many ruined sites were revealed. It was decided to select one of these sites as a base of operation.

The one selected was an area that had been under extensive cultivation for approximately 25 years. As the midden was extremely shallow, averaging less than a foot and a half deep, plowing and discing over this long period of time had completely destroyed the vertical and horizontal distribution of the incorporated artifact material. As it was primarily a surface site, farm workers and pot hunters had collected from it extensively. Relatively little of the more sophisticated lithic artifacts remained. Due to these prior activities, the scientific value of this site was limited to the collection of what material remained. Any material collected could be cleaned and identified as to usage, and then organized into study assemblages. It was felt that the salvage of the remaining material would be the major contribution that could be extricated from the site and therefore would be a perfect classroom for the study and application of archeological field methods and techniques.

The program followed very closely Dr. Heizer's *Handbook of Archeology Field Methods and Techniques*. *

The program went forward with ease, and the enthusiasm engendered originally was maintained throughout the entire program.

The outline used is available through

* SoM, p. 125

SCIENCE OF MAN. With slight modifications it may be used by any age group from grade school to adult amateurs.

Turn the page and contrast the work of these students with the work of those who have not been so fortunate.

Early Munitions Factories And Trading Posts

It is well known that obsidian is not found in situ in western United States east of Yellowstone Park, yet a considerable amount of both worked and unworked obsidian is found in mounds of the midwest. How did this material get there and where did it come from?

Petrological examination has enabled its source to be identified. Seemingly, most of it originated from one of two main sources, either the well known Obsidian Cliff of Yellowstone or the celebrated Glass Buttes of central Oregon.

Glass Buttes has been and, in fact, still is a main source of supply of large quantities of gem grade obsidian. There still may be seen, in some places knee deep, pieces of chipped obsidian dropped by the early munitions makers. But how did it get back east?

Some forty years ago, I visited the Warm Springs Indian Reservation in central Oregon. In a ceremonial hut could still be seen a few old, badly worn, buffalo robes. These robes were carefully preserved and cherished by the old-timers. By careful questioning I was able to determine that prior to the coming of the white man, the Plains Indians went westward to meet members of the Oregon tribes going east. Just where the two groups met I was not able to determine. There was definitely, however, a halfway point where the two groups met and where annual trades took place.

At that "trading post" the western munitions makers traded their obsidian materials, both rough and worked, for eastern buffalo robes. Doubtless this commercial enterprise was carried on for centuries, likely accompanied by shop talk and the exchange of technological methods. — H. C. Dake

Oceanic Migrations . . .

CONTINUED FROM PAGE 23

Deities." *Southwestern Journal of Anthropology*, Vol. 16, No. 3, Autumn, 1960, pp. 317-337. (A comparison of certain similarities in calendrical lists from Mesoamerica, Eurasia, and Polynesia.)

Clinton R. Edwards, "Sailing Rafts of Sechura: History and Problems of Origin." *Southwestern Journal of Anthropology*, Vol. 16, No. 3, Autumn, 1960, pp. 368-391. (Demonstrates the existence of present-day centerboard sailing rafts.)

Fig. 2. Identifying an artifact.



Editorial



Wanton Vandalism

Much has been said in past issues of this magazine about the wanton destruction of our ruins and what this vandalism means to our knowledge of prehistory. Most anthropologists feel the same way as we do about this destruction, yet relatively little is being done through legislation or education to suppress it.

Two examples of this gross vandalism to our national heritage of the past have been noted since publication of the last issue of *SCIENCE OF MAN*.

At Black Canyon in San Bernardino County, California, are some excellent examples of Indian picture writings. Among the finest of this group were pictures of a row of mountain goats going single file up a slope. There were eight mountain goats, but now there are seven.

The president of the San Bernardino County Archeological Society saw one of

the goats being chipped out and carted away, but was powerless to stop it.

The picture writing, according to the observer, was taken away in a green truck belonging to a Gardena (Calif.) florist who parked his truck quite openly and unashamedly at the site. (Fig. 1.)

As a boy, the editor lived on a ranch at Yakima, Washington, and spent many pleasant hours wandering over the nearby hills and studying the Indian sites in the vicinity. One favorite spot was the Indian Painted Rocks on the Natchess Road, now Highway 410, five miles east of Yakima. *How that site has changed!*

Although it is now a state park meant to preserve the pictographs, it more closely resembles a men's rest room on skid row. The Indian paintings are still visible, if the observer strains his eyes, but he doesn't have to strain his eyes to see the dirty words, the initials of the local citizenry, or the words of the overzealous religious fanatics in the area. (See photographs, Figs. 2 - 5.)

Having seen reasonably well kept sites throughout the United States, we were shocked by the gross vandalism at this

site in a progressive state that we once called our own.

Although none of our family can be called irreligious by any stretch of the imagination, all of us were deeply shocked by the work of the religious vandals who have undoubtedly lost more souls by their signs over the pictographs than they have ever gained.

Suggestions for both education and legislation that would help save our ruins and Indian writings have been made in editorials in the past. Other suggestions are undoubtedly available from anthropologists at local universities, colleges, museums, and societies. Many complimentary letters have been received from individuals and societies about these suggestions and some are taking steps to train their local citizens to appreciate and protect our Indian relics.

But "some" are not enough. All of us together are the only ones who can stop this vandalism. Each ruin or Indian writing site is a page in our prehistory. Once destroyed, it can never be replaced. We cannot turn back the clock. Remember, it is now or never.

Shall We Have This . . .



Or This? ➡



Fig. 3. Mr. Moriarty instructing children. (Story, page 24.)



Fig. 1. The "Lost Sheep"
of Black Canyon.

Courtesy of
Dr. Gerald A. Smith

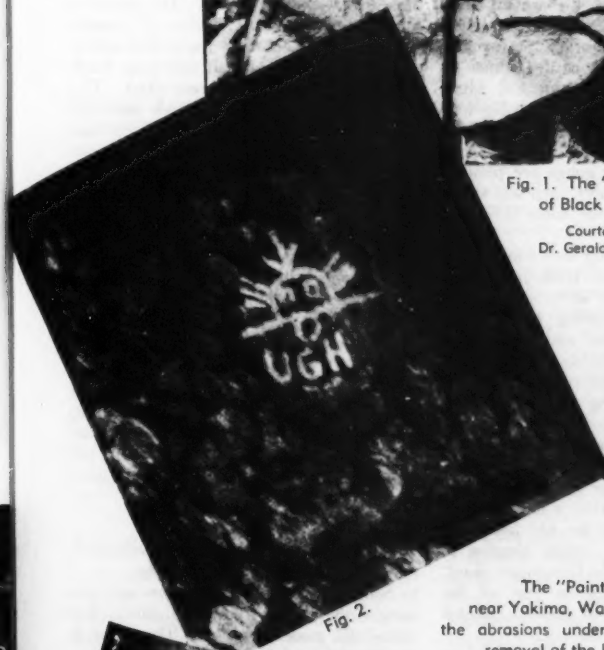


Fig. 2.



Fig. 3.

The "Painted Rocks"
near Yakima, Washington. Notice
the abrasions under the "SO" due to
removal of the Indian writings.



Fig. 4.

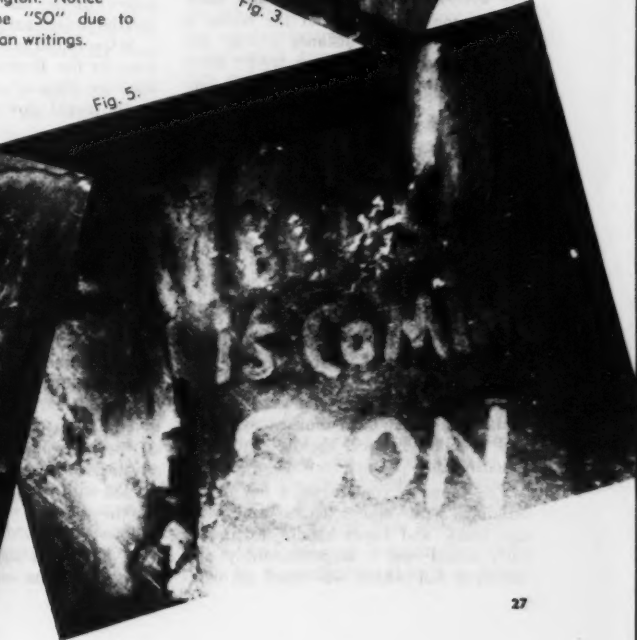


Fig. 5.

Marshall Islands . . .

CONTINUED FROM PAGE 13

The player hops on one foot in the single spaces and two in the double spaces, and when the first square is reached the player much kick the rock out of the area while standing on one foot. This becomes increasingly difficult as the squares at the end of the playing area are reached because the distance is greater over which the rock must be kicked.

Diseases

Marshallese at one time had the usual troubles of mankind. Yaws was very prevalent, and dysentery, cancer, syphilis, and even leprosy have been noted. Some of their habits appeared very unclean to us, as these people would blow their nose discharge on the ground, cough and spit, and always have dirty fingernails. However, these were difficult times (war years) and we did notice a great improvement of health habits as the military provided clothing, toothbrushes, soap and other articles with which the people could practice better health habits.

Houses

The native hut is rectangular with a thatched gable roof. The walls are thatched on the exterior and sometimes lined with mats inside. Windows are cut in the thatch so that they may be raised during good weather to provide ventilation. It is said that formerly the floor was a platform raised on piles three or four feet above the ground, but today fresh coral is spread on the ground and covered with a mat. Usually there is an independent cook house of smaller size with a pit for a fire. Coconut shells are used for cooking. The men do most of the work in building a house, but the women make the thatch and mats. Many times the height of the house is determined by the distance a man can reach, because seldom is a ladder used.

The houses of the chiefs are larger than those of the common people and are usually partitioned into rooms by the use of mats. Today many of the houses are built of imported lumber and have a corrugated iron roof to catch rainwater. A few of the houses even have glass windows.

Furniture consists of mats, baskets, and various implements. There are no chairs. The beds are only mats which can be rolled up during the day. Today a few of the more important people do have tables, a few chairs, and in rare instances even sewing machines. Occasionally sheds are made for canoes. Separate communal cook houses are built and special isolation shelters for menstruating and parturient women.

The Japanese constructed a few public buildings with cement floors, water storage tanks, and copra sheds. Formerly, each island had a large assembly and tattooing hut which was used on cere-

monial occasions. Since the missionary influence, churches and schools have appeared instead.

When time does not permit or when the person is too lazy to build a house, a shelter is constructed like a lean-to. The purpose of this shelter is merely to keep out part of the rain.

Native Music

The native people have a great love of music. They all love to sing, and they have great ability for singing harmony. All songs seem to be in a slow tempo. Hearing them sing reminds one of the slow rolling of the waves. The men's voices are deep and rich, and when heard in a mixed chorus, temper the shrill, unpleasant voices of the women.

One night I watched an old blind man sing some of the songs he had composed. They were good, and the people were able to learn his songs very quickly. Some of the songs are punctuated by grunts. In others, men will shout for a repetition or give some direction for the singing.

Men and women sing love songs back and forth to each other while in groups. This represents more of a game than anything else and during the process there is much laughter and merriment. Welcome and goodbye songs are much in evidence. The people of an island will line the beach waving pieces of cloth or waving their hands in a circular motion and sing to the visitors as they leave.

Many of our hymns have been learned and are sung by the natives in their language at their usual slow tempo. This music reminds one of the old fashioned organ. Some of the native singing is somewhat similar to the Gregorian chant. There can be no question that all the native music has been greatly affected by the missionary influence.

A few of our popular songs — "Springtime in the Rockies," and even "Pistol Packing Mama," were being sung, also in the usual slow rhythm and beautiful harmony.

The native dance and war songs are not complicated. In fact, the music consists of only a few bars repeated over and over again. This probably is more typical of their own music than the many songs which they sing most.

An outstanding fact, I think, is that the natives have a good ear for music. They learn a song very rapidly and can sing beautiful harmony. The natives have few instruments but some can play the organ, guitar, and violin.

Adult Games

The favorite game of the young men of the Marshall Islands is surrounded in mystery. The words and music connected with the game are not understood by the players. The story of the game follows:

A long time ago one of the men of Ujae Atoll was asleep one night on the

ground and he began to dream. During his dream he saw many people playing a strange game with sticks. The next day he continued to think about the strange game that he had watched in his dream. Suddenly one of the men he had watched in his dream came up out of the ground and taught him how to play. The Ujae man then taught all the people of the atoll how to play and soon all the people of the Marshall Islands were playing the game with much enjoyment.

The name is not Marshallese because it is called *Jobwe* and the people now do not know what it means. The game is played by any even number of players above eight. Each man has a stick about three or three and a half feet long. Each man is dressed in a grass skirt. The group forms two lines so each man has a partner. They go through intricate, fast movements continually beating out a rhythm by hitting their sticks against those of their partners, first on one end, then on the other. The women and others sing a song in accompaniment and a drum is also used to add to the rhythm.

The song is like a chant and the words, meaningless to the author, were as follows:

Jobwe	Jobwe	O-O
Jobwe	Jobwe	ae-ae
Jouto	Kojie	
Etaie	Jie	
Lie	Rukieb	
Lewa	Ioie	
Pitre	Wonin	
Lewa	Ioie	
Pitre	Wonin	
Lewa	Ioie	
Ble Ble	Loitileb	
Ble	Ble	Ie

Some of the people now know only the song, others just know the dance, but many still remember both. The game is greatly enjoyed by all of them.

In the next issue, Dr. Smith will conclude his article by telling us something of the legends of the Marshall Islanders and about their food.

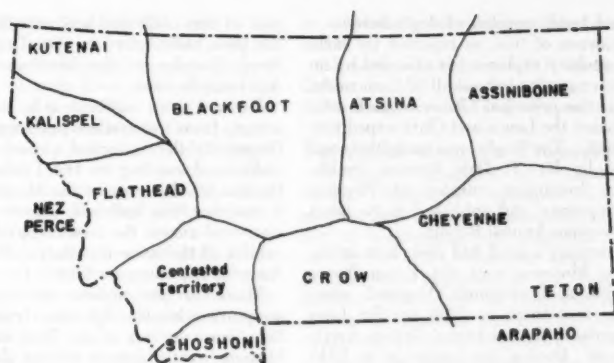
A Better Way

An old trapper devised a different way of trapping and as a result grew wealthy. After a short time he retired. A neighbor, wanting to get rich quick, induced the old trapper to tell him his secret method before he left to retire in the city.

Five years later, the retired trapper went to see his old home and visited the old friend to whom he had given his secret.

To his amazement he discovered his friend exceedingly poor and living in worse circumstances than he had ever seen him. Yet he was still trapping for a living. He therefore asked him about the trapping business and whether he was still using his secret method.

"No," said Pierre, "I didn't use your way very long. You see I found a much better way."



Tribal Areas in Montana In 1855

We often receive inquiries about the location of Indian tribes at various periods in our (or their) history. This is not always available to us. We are therefore glad to publish distribution maps when available to us. The accompanying map is from *Arrowhead Chips*, Vol. III, No. 1, January 1961, which was sent to us with the authority to reprint it. *Arrowhead Chips* is the official publication of the Arrowhead Mineral Club, Inc., Great Falls, Montana. The original map apparently came from *Archeology in Montana* by Carling Malouf. The copy bears the notation: "Boundaries are based on treaty specifications as well as their own use."

Asiatic Material

An extensive collection of ethnological material illustrative of the cultures of Indian, southeast Asia, Taiwan, Korea, and Japan has recently been made for the U.S. National Museum by Dr. E. I. Knez, an ethnologist with the Smithsonian Institution.

During a trip which started last October, Dr. Knez, with the help of local scientists, gathered ethnological artifacts for specific exhibit themes. The material is intended for permanent display in a modernized hall of the "Peoples of the Pacific and Asia." The Indian collection is particularly diversified with material such as costumes, folk jewelry, ceramics, and religious items. Some of the textiles are from the vicinity of the great religious center of Banares. Associated with the temples are great shopping areas, catering especially to pilgrims, where distinctive textiles have been developed through the centuries.

From Taiwan Dr. Knez obtained materials which will be used in a representation of the "Temple of Heaven" of Peking to illustrate a shift of cultural emphasis from the religious to the esthetic. Theatrical material also was obtained to present a particular scene in Chinese drama,

a Chinese empress with her young son forced to choose between her responsibility to the state and her filial piety to a usurper.

The synthesis of old and new in agricultural technology will be one theme of the Japanese exhibits. For this Dr. Knez has arranged for a collection of agricultural implements which is now being prepared for shipment to Washington.

The new collections gathered by Dr. Knez will be particularly useful, say Smithsonian officials in supplementing and filling in critical gaps.

(News release, Smithsonian Institution)

Chicago Museum

CONTINUED FROM PAGE 17

Panorama of the Pacific," by Ronald W. Force, curator of Oceanic Archaeology and Ethnology, though short, is well illustrated with various artifacts of the Polynesian and Micronesian cultures. Approximately a page is devoted to the Hawaiian Islands, the Marquesas, New Zealand (Maori), Easter Island, and Fiji, illustrated by a spectacular artifact from each location.

The cover photograph shows a very unusual "hei-tiki" of the Maoris, the Polynesian people of the North Island of New Zealand. This fine product "... of Maori workmanship—a neck ornament ... made of nephrite greenstone ... is one of the largest ornaments of its kind known to exist and is remarkable for its excellence and delicacy of its form."

New Mayan Site By Ian Graham

Illustrated London News. V.238:6351. pp.666-667. April 22, 1961. This site of the Classic Maya period was discovered in 1958. It is called Aguateca. The first expedition to work on the site which is dated at 300-900 A.D. will work during the summer under the direction of Ian Graham. The group is in Aguateca at present. The site is rather minor but may yield information.—*Interamerican*, June 1961.

Archeology of Viet Nam

A new three-part exhibit was opened October 26, 1960, in Hall 22 of the Smithsonian's Natural History Building under the auspices of the National Collection of Fine Arts. Entitled "THE ART AND ARCHEOLOGY OF VIET NAM," the exhibition features archeological items for scholars interested in ancient cultures, ethnological items for students of sociology and international relations, and arts and crafts items for artists and designers.

A part of the extensive efforts in this country to promote learning and the exchange of knowledge with friendly oriental peoples, the exhibition was assembled from the collections of several cultural centers. One part came from the Viet Nam Ministry of Education, contributors to which include the museums of Saigon and Hue as well as art centers like that at Bien Hoa. This collection was transported by the U.S. Navy to Long Beach, Calif., and was accompanied by Nghiem Tham, chief of the Division for Archeological Research, National Institute for Historical Research of Saigon. A second shipment was picked up in Ostend, Belgium, from the Royal Museum of Brussels. Also, the Peabody Museum of Cambridge, Mass., sent a selection from its collection of Viet Nam antiquities.

The archeological items in the exhibit include, in particular, objects in bronze

and stone from the ancient Cham civilization which lasted in Southeast Asia from roughly A.D. 300 to 1300. Among other featured objects are extremely rare gems and jewels recently excavated in Oc-eo. Oc-eo, an important site, reveals Greco-Roman cultural penetration in this part of the Orient earlier than was previously known. The artifacts of this portion of "The Art and Archeology of Viet Nam" include gold portrait coins and cameos, brooches of carved precious stone, and other exquisite examples of the lapidary art.

Of interest to the student of music are musical instruments of both early and recent creation, developed from ancient Near Eastern origins. These are accompanied by examples of published compositions and tape recordings of contemporary Viet Namese musicians. Traditional ceremonial objects and ritualistic symbols accompany an ancestral altar. Weapons, hunting and fishing artifacts, costumes, and other fine examples of primitive life in mountain provinces speak of the long practice of folk art among simple peoples, the descendants of the ancient Cham and the early inhabitants of the area.

After its Washington showing, concluded on December 8, the exhibition began its tour through the United States, traveling in two circuits. While one portion is being shown in the large city museums of Baltimore, Philadelphia, Cleveland, St. Louis, and Portland, Ore., the other will be displayed in various university art centers.

Thomas M. Beggs, director of the National Collection of Fine Arts, says of the exhibit: "The Viet-Nam Government has made special efforts to obtain the finest available examples of the work of living craftsmen who demonstrate traditional techniques and motifs of the country's great national heritage. A public preview of portions of the exhibit was held in Saigon last June, attended by President Ngo Dinh Diem and the American Ambassador to Viet Nam, the Hon. Elbridge Durbrow, among others. The Smithsonian is greatly indebted to Mr. Durbrow for his interest in promoting this exhibition, and also particularly to Dr. Olov R. T. Janse, archeologist who excavated many Han, Sung, and Ming tombs under French patronage in the 1930's and who has given generously of his time and advice in the selection of specimens for the display." (Smithsonian Institution, Sept. 14, 1960.)

Head Deformation

A flattened head was symbolic of a free man among the Chinook Indians of the Pacific Northwest. Every child belonging to the tribe was subjected to a long and probably rather painful process of head flattening shortly after birth. This was prohibited for children of "slaves." They retained their normally

shaped heads, symbol of degradation.

Evidence of this, as reported by early 19th century explorers, is afforded by an intensive study of the skull of Comcomly, one of the principal Chinook chiefs who welcomed the Lewis and Clark expedition in 1805. The study was recently completed by Dr. T. Dale Stewart, Smithsonian Institution curator of Physical Anthropology, and published in the latest Smithsonian Annual Report.

Comcomly's skull had been kept at the Haslar Museum near the Royal Naval Hospital at Portsmouth, England, since it was sent there in 1838 by Sir John Richardson, the celebrated British Arctic explorer. During the bombings in 1940 the museum was destroyed. The skull, however, remained undamaged and was returned to the United States in 1953. It was thereupon sent to the Smithsonian for an anthropometric study.

There can be no question of its identity, Dr. Stewart says. Moreover, it is one of the few Indian skulls of the period whose owner can be identified with a known individual. The skull vault, Dr. Stewart found, shows well the extreme artificial deformity — the sign of freedom — to which Comcomly had been subjected as an infant, and confirms the accounts of the early explorers. He quotes from Washington Irving's *Astoria*:

"The process by which [head] deformity is effected commences immediately after birth. The infant is laid in a wooden trough, by way of cradle. The end on which the head reposes is higher than the rest. A padding is placed on the forehead of the infant, with a piece of bark above it, and is pressed down by cords, which pass through holes on each side of the trough. As the tightening of the padding and the pressing of the head to the board is gradual, the process is said not to be attended with much pain.

"About a year's pressure is sufficient to produce the desired effect, at the end of which time the child emerges from its bandages a complete flathead, and continues so through life."—(Smithsonian News Release)

New Archeology Hall Open

On Wednesday, May 3rd, the completely new Williams Hall of Middle American Archeology was opened to the public, at the Museum of the American Indian in New York. Housing one of the finest pre-Columbian collections in the world, this hall was designed to present the highlights of the civilizations which flourished from northern Mexico to southern Panama for 3,000 years before the Spanish Conquest.

Newly installed and colorfully displayed, the exhibits contain over 1,500 objects chosen with care to exemplify the extraordinary spiritual, artistic, and material heritage left by the pre-Columbian peoples of the area. A large

part of this collection was acquired over the past half-century by Dr. George G. Heye, founder of the Museum of the American Indian.

Every known cultural area is represented, from the earliest horizons of the Olmecs to the historical period of the codices. According to Dr. Frederick J. Dockstader, Director of the Museum, "It is felt that this hall will present to the interested viewer the most comprehensive exhibit of the ancient cultures of Middle America anywhere available."

Many of the objects on view are sculpture—delicate figurines from Tlatilco, genre figures of the West Coast of Mexico, exotic deities of the Zapotecs, and monumental stone carvings from the great Mayan civilization of Guatemala.

A large part of the collection originates from some of the lesser known areas of Costa Rica, Panama, El Salvador, Honduras, and Nicaragua. Beautifully polychromed pottery with delightful bird, fish, and animal motifs, amusing figurines, and massive funerary urns—all of these, in their own way, put us in touch with peoples whose names have long since been forgotten.

Of particular interest are the specially arranged displays of gold, jade, shell, crystal and amber objects used for personal adornment and ceremonial purposes by both men and women; the fine varieties of musical instruments featuring drums, bells, rattles, ocarinas, flutes, whistles and trumpets. A special exhibit of the pre-Columbian ball game contains a model of the ball court as well as equipment associated with the game.

Some of the finest objects on view include treasures unequalled anywhere today: the famous turquoise mosaic *chimalli*, or ceremonial shield of the Mixtecs; one of the finest, known stone sculptures of Xipe Totec, the Flayed God; a choice, carved white marble vase from Honduras; and an intricately sculptured clay vessel collected in Guatemala. Each of these masterpieces is eloquent testimony to the magnificence of the civilizations which disappeared over 500 years ago.

The Museum of the American Indian is at Broadway and 155th Street, New York City, and is open to the public Tuesdays through Sundays, 1:00 to 5:00 p.m. It is closed on Mondays. Admission is free at all times.

Reprints from Science of Man

In response to numerous letters inquiring about obtaining reprints from *SCIENCE OF MAN* and other publications of Gemac Corporation, the following information is given. As some of the letters also requested prices for having reprints made by Gemac Corporation of material originally printed in other publications, that information is also included.

(1) Full page reprints (8½x11 inches)

from SCIENCE OF MAN that require no changes in set-up are obtainable at \$9.00 per thousand copies per page, printed on one side of each sheet only. Printed on both sides of a sheet the price would be \$15.00 per thousand sheets (two pages). In this type of a reprint, the only changes than can be made are to block out other articles on the same page, or make minor corrections that can be effected by opa- quing on the negative.

(2) Reprints that would require re- pasting and a new negative would cost \$14.00 per thousand, printed on one side of the page only. Printed on both sides of the sheet, two pages back to back, the cost would be \$25.00 per thousand sheets.

(3) Reprints from GEMS & MINERALS can be handled the same as those from SCIENCE OF MAN, pars. 1 and 2, above. THE MINERALOGIST is a smaller size mag- azine, and reprinting articles from it would require repasting and rephoto- graphing. The prices would therefore be the same as given in par. 2, above.

(4) Reprints from your own maga- zine or from any other magazine for which permission to reprint may be ob- tained, and for which camera-ready copy is available (8½x11") would be charged at the rate indicated in par. 1 above.

(5) If material from your magazine or other publications is not entirely ready for photography (camera-ready), the price would be that indicated in par. 2. In this case, the type, illustrations, and the column width would have to be suitable for repasting on our 8½x11" format.

In connection with reprinting material of the types indicated in par. 4 and 5 above, your attention is called to two other factors:

(a) First, permission must be obtained from the copyright holders; in the case of your own magazine, of course, there would be no problem. It has been our policy, although Gemac Corporation owns the copyright for its three magazines, never to allow reprinting of "by-lined" articles without the permission of the author. (We do not require it in the case of articles written by staff members without a by-line.) We would also expect you to obtain permission of the author in the case of articles carrying by-lines from other publications, in addition to obtaining the permission of the copyright owner.

(b) The other consideration is this: In the case of making reprints of our own articles, there is considerable pub- licity value, and we can afford to set a price as economical as possible. In the case of reprints from other publications, it would be merely a commercial printing job and our prices therefore should be higher. If the copy or negative is such that we can add a single line (such as "SCIENCE OF MAN REPRINT No. . . ."), there would be some value to us and the reprints indicated in pars. 4 and 5 could

be made at the rates indicated in pars. 1 and 2.

All prices quoted are F.O.B. Mentone, California. Shipping weight of 1,000 sheets is approximately eleven pounds.

Tut-Ankh-Amen's Treasures

A major exhibition of "Tut-Ankh- Amen's Treasures" appeared a few months ago in the National Gallery of Art in Washington and museums in a number of other American cities. The exhibits were organized by Dr. Froelich Rainey, president of the American Asso- ciation of Museums and director of the University Museum, University of Penn- sylvania. The selection came to the United States through the cooperation and as- sistance of his Excellency, Dr. Tharwat Okasha, Minister of Culture and National Guidance of the United Arab Republic, and through the Cairo Museum where the objects are usually on display. The ex- hibition was circulated in this country by the Smithsonian Institution Traveling Exhibition Service.

The majority of the 34 antiquities in- cluded came from the tomb of King Tut- Ankh-Amen, which was discovered in the fabled "Valley of the Kings" in 1922 by Lord Carnarvon and Howard Carter. Tut-Ankh-Amen, the son-in-law of the heretic King Akn-en-Aton who briefly turned Egypt to a monotheistic worship of the sun, was a short-lived king who reigned for nine years in the 14th century B.C. Little is known about this ruler except that after beginning his reign as an Aton, or sun worshiper, he reverted to the old religion of many cults, and that the true power was held by the high priest Ay, who ruled after King Tut.

The tomb treasure of Tut represents technically and artistically the best that Egyptian art has produced. In the last half of the eighteenth dynasty, court life gave out a warm and light-hearted spirit that is reflected in scenes of domestic affection and in the production of small objects, which apparently served no more serious purpose than that of pleasing their owners. This art forms a striking contrast to the more austere religious convention that characterizes the other Pharaonic tombs in the "Valley of the Kings."

In all the objects one finds an extreme delicacy of style and refinement, as seen in the sheath of a dagger (found on the body of the king) on which an artist represented a variety of wild animals, one attacking another in such a way as to form an interlace pattern. Another ex- ample of this exquisite workmanship was seen in a gold staff surmounted by a small figurine of the king. Included also were jewelry of the king, a gilded stat- uette of a hawk-headed god, miniature coffins and likenesses of the mummified king, and beautiful vases carved with winged symbols and the cartouches of

the king. These objects were placed in the burial chamber in an elaborate cere- mony which included a special banquet, so that the departed king could make use of them in an afterlife.

This exhibition, which opened at the National Gallery of Art on November 4, called attention to the importance of the Egyptian temples which will be flooded by the Nile upon the completion of the Aswan dam project in the Nubian Valley.

Smithsonian News Release, July 29, 1961.

Our Cover . . .

The figurine shown on our cover this month is from a drawing by Rúben Méndez, as are most of the other drawings illustrating the article on head shrinking in Ancient Mexico. The figurine is one from the Isthmus of Tehuantepec, and depicts a shrunken head attached to the belt of an ancient Zapotec. Sr. Méndez, like the other natives of Mitla, Oaxaca, where he lives, is a Zapotec himself. He has been a student of Mr. Howard Leigh's for some time, and like several other young artists of that community owes his start in art to Mr. Leigh.

Photographs . . .

CONTINUED FROM PAGE 2

to leave one or two large objects, perhaps two rocks, a cactus, or a tree, for future identification. Later photographs taken of your site, made from a position so that your rocks or cacti will be in the same relative position, may turn out to be a lifesaver for you.

Other Data

Dates, weather conditions, position of the sun, etc., many times can be of tremendous importance. Of course you should have these data in your notes, but it never hurts to have them in your photographs, too. It may help cover your mistakes if you forgot to record it in your notes, and it may also be used to double-check your notes.

I usually carry a small blackboard of Masonite, 6x9 inches, painted on both sides with a dull flat black paint. On one side near the bottom I have a six-inch rule painted with alternating inches of black and white. On the other side near the bottom an arrow is painted pointing to the letter "N," for north. I use one side or the other. Above the arrow or the scale, I can write such things as the date, weather, film roll number, etc. My first exposure on each roll is entirely data of weather, date, etc., with the roll number. If I do not need the scale or the pointer, I usually run a chalk line through it. This indexing suffices for the whole roll (as far as general data are concerned). On later pictures I use either the rule or the pointer. If I need any more data for identification, I can also write them on the board.

You may wonder why the scale and the pointer are not on the same side. In photographs, the scale must be parallel to the object, if you are to get a true measurement. The direction pointer, on the other hand, points toward the north and has no definite relation to the object

or camera. Therefore, since I can't have them together, I put them on opposite sides and use something else to indicate size or direction.

In general, remember that the data on your pictures should be as complete as possible and yet consistent with the rules of good photography. That is, make it complete, but don't clutter your photograph. Have a scale of some kind in all of your photographs, use a direction indicator when the direction is important; add other data when necessary, but don't overdo it.

One last word. If you think you need more data than you would really like to put in your picture, take two identical pictures, one with the data and one without. It may cost you a few cents more, but you'd be surprised how handy a picture with and one without data may be at some future time. — *Joseph E. (Gene) Vincent*

Melanesian Cults . . .

CONTINUED FROM PAGE 15

society, then, were not affected, only those halfway between aboriginal and western culture.

It has been pointed out that there was a basic anti-White element common to each of the cult movements even though it was more explicit in the cargo cults than in others discussed. Possession in the form of fits and trances was common to most of the cults although varying in degree. In many areas males were hired from the native villages to work for European employers. These men left home and lived in all-male barracks which was a socially disruptive factor in itself.

These men saw the white man's material goods and acquired a taste for some of them. Native wages were not sufficient to satisfy these newly acquired desires. The native looked to see from where the white man received his goods. He saw that on the whole the white man did not work, did not manufacture for himself, and he realized that the material things he desired came by ships from somewhere, but where? The native had no conception of other countries, other peoples, of Europe or industrialized societies.

Another factor which frustrated and confused the native was the fluctuating European and world economy. If, for example, the native was selling sago or copra to European traders, he would receive one price one time and another price on another occasion. The fluctuating world market was again beyond Melanesian comprehension.

The cults we have considered played an important and functional role for the Melanesian as he faced this new and chaotic world which had destroyed the

old culture, the old frame of reference. In their search for meaning in the new way of life, the cults provided hope. The inhabitants of Melanesia were saved from utter desolation as prophets appeared predicting that things would be better. A new basis for personal orientation was somewhat alleviated when new goals and ideas were established. The natives no longer felt themselves in a hopeless situation. They were given a sense of being able to do something about the strange new white man's world that had suddenly been thrust upon them.

BIBLIOGRAPHY

- Barber, Bernard. "Acculturation & Messianic Movements." *Reader in Comparative Religion*. Ed. by William Lessa & Evan Vogt. Evanston, Ill., & White Plains, New York: Row, Peterson & Company, 1958.
- Beckerman, David. "The Cargo Cults of New Guinea," to appear in an early issue of *Science of Man*.
- Belshaw, Cyril S. "The Significance of Modern Cults in Melanesian Development." *Reader in Comparative Religion*.
- Mead, Margaret. *New Lives for Old*. New York: William Morrow & Company, 1956.
- Worsley, Peter. *The Trumpet Shall Sound*. London: MacGibbon & Kee, 1957.

Errata, October 1961

Page 184, col. 3. Delete the sentence, "One was identified . . . mastodon hunting."

Page 206. "Archeologist discusses his field." Add the following credit line: "Reprinted from the *Mexico City Collegian* with permission of the author."

Page 207, col. 1. Change "A.D. 900" to read "about A.D. 1187." In regard to the entire article by Sr. Díaz-Bolio, please note that the opinions expressed are those of the author and not necessarily those of the publisher or editor. Note also that the article is a resume, by the author, of his own book, and that in this short resume he does not give his reasons or quote authorities.

And Now, the Chinese!

The following information was received from Mr. Eugene (Gene) W. Shepard, 1267 Bordwell, Colton, California. Although scanty, it is published for the benefit of those who may wish to check further.

Thirty years ago when well No. 15 was being dug in Colton, California, forty feet down in undisturbed soil was found a number of small black and white porcelain beads (of Chinese style) together with the remains of a primitive campfire.

Present at the time were a brother-in-law of Mr. Shepard's and Mr. Beckstall, both of whom are still living in the area. Those desiring more information should contact any of the persons mentioned. Mr. Shepard is the president of the San Bernardino Archeological Society with headquarters at Bloomington, California, and is well versed in the prehistory of San Bernardino County.

Book Reviews



THE SAVAGE MY KINSMAN, by Elizabeth Elliot. New York: Harper and Bros., 1961. 140 pp., 8½x11", well illustrated. Foreword by Cornell Capa, of the *Life* magazine staff. \$5.95. Reviewed by Joseph E. Vincent.

Though primarily a narrative of Mrs. Elliot's life and travels as a missionary in the Auca area of Ecuador, this interesting book contains much information about these primitive Indians of anthropological interest.

In an interesting, story-telling manner she tells plainly and frankly of the poor conditions under which the Aucas live and the simple life of these warlike people. The double page photographs, two of which are in color, serve to illustrate the dramatic story of her life and the life of her young daughter among the very Indians who had killed their husband and father just a few years before. By the time the last page in the book has been read and the book closed, one has the feeling that he has actually experienced the initial steps in the acculturation of a once murdering group of savages into a peaceful, lovable but yet primitive people.

THE EVOLUTION OF MAN, by Gabriel Ward Lasker. New York: Holt, Rinehart and Winston, Inc. 1961. 240 pp., plus xxvi, approx. 90 illustrations, a bibliography, and index. \$3.50. Reviewed by Joseph E. Vincent.

Emphasizing human evolution, this extremely fine book presents the field of physical anthropology in an integrated way that makes it an unusually good text for the beginning student in that field. The book's twenty chapters are arranged in a logical order particularly adapted to college use. It begins with the theory of evolution, its origin and development, and then proceeds in an orderly fashion through the development of non-human species, the fossil primates, and paleo- and modern man. It terminates with the study of blood groupings, population genetics, modern races and their relationships, anthropometry, and possible future evolution.

As a teacher of physical anthropology, I have found it impossible to obtain a good textbook, particularly for freshmen. Good texts have been available for the advanced student but it has been impossible to find a suitable one for first-year students. *The Evolution of Man* fills that need very well, although because of its size it will have to be supplemented by additional readings from other related texts.

Maya Scholar Differs

In the last issue of *SCIENCE OF MAN* an article was published entitled, "Early Origin of the Feathered Serpent in Yucatan," by Sr. José Diaz-Bolio. This was Sr. Diaz-Bolio's summary or review of one of his own books, and expressed his own opinions, not necessarily those of other scholars. Unfortunately, in his short summary, he did not give his reasons for his opinions or any references. The summary was published merely to let our readers know there were books and opinions that differed from the usually accepted ones.

Prior to the publication of the article, a copy of it was sent to Charles Gallenkamp, the author of *Maya: The Riddle and Rediscovery of a Lost Civilization*, and it was intended to publish Mr. Gallenkamp's opinion along with that of Sr. Diaz-Bolio's. Unfortunately also, his reply did not arrive until several weeks after the deadline, and Sr. Diaz-Bolio's article had to be printed without it. The pertinent parts of Gallenkamp's letter follow:

Frankly, I can find absolutely no grounds for his rather far-reaching conclusions as he presents them. He does not give the reader any specific reasons why his "old ideas acquired through books were shattered." The statement, "that nothing existed in art but serpents, rattles, feathers, and other features of a feathered rattlesnake" is, of course, too incredible to be taken literally. There is no supporting evidence for any of his sweeping generalizations, and his characterization of Dzibilchaltun as "a preclassic site" is completely misleading. It certainly has preclassic levels, but it was occupied, according to Andrews,* until the sixteenth century. The Temple of the Seven Dolls, however, was definitely *not* preclassic — carbon 14 dates place its building at roughly A.D. 500 — the very middle of the Classic period. No one can question that the serpent motif is among the oldest and most widespread in American archeology, but Diaz-Bolio offers nothing to support the assumption that among the Maya the early use of serpents stemmed from a pre-Toltec recognition of Quetzalcoatl.

*E. Wyllys Andrews, "Dzibilchaltun: Lost City of the Maya," *National Geographic Magazine*, January 1959.

"Whatever made you marry an archeologist, my dear?"

"Well, I was told that archeologists appreciated older things, so I thought one would keep his interest in me as I grew older."

"And did he?"

"They forgot to tell me the rule works in reverse in the case of women, though."

Dear Editor:



In the article, "Last Days of Petroglyph Canyon," by Rex Eidson in *SCIENCE OF MAN* for October 1961, the following sentence occurs in reference to the Wake-map "Mound" on the north bank of the Columbia River near The Dalles, Oregon:

"One [of the more than 10,000 artifacts recovered from this site] was identified by Dr. Alex Krieger, archeologist and former director of Riverside City Museum (California), as a 16,000-year-old spearhead (a Folsom point) used for elephant and mastodon hunting."

This statement is an example of scrambled reporting. The artifact in question was sent to me in 1955 by Dr. Doug Osborne, then Curator of Anthropology at the Washington State Museum, along with four other spear points from the Northwest, for identification. Osborne's paper on "Early Lithic in the Pacific Northwest," published in *Research Studies of the State College of Washington*, March 1956, includes my remarks on these five artifacts as well as Osborne's own observations.

The specimen called The Dalles point by Osborne was found in 1932 by Mr. Adam East of Moses Lake "while he was screening in a bar of sandy area on the Washington side across the Columbia River from The Dalles, Oregon." Whether or not this screening was in the Wake-map "Mound," I do not know; it seems doubtful. It was my opinion that the fluted point is of the Clovis type and that it is authentic — not a fake. Beyond that, I gave no such information as that it might be 16,000 years old or that it was used for "elephant and mastodon hunting." Clovis points *might* be as old as 16,000 years in some parts of the Great Plains or Southwest, but in those places where dating is fairly well controlled, datings of 12,000 years or so are on more solid ground. In the eastern United States and far western states, no one has any way of knowing how old they are. The Clovis points, furthermore, have been found in several places with extinct mammoths or elephants, but never with mastodons.

I only wish to point out that Mr. Eidson has combined a simple identification (although wrongly referring to the point as "Folsom") with popular notions about age (16,000 years) and use (for "elephant and mastodon hunting") which are derived from an entirely different region and are probably erroneous at that.

Alex D. Krieger

Research Professor in Anthropology
University of Washington
Seattle, Washington

Surface Hunter

by Arthur George Smith



Editor's note: Qualified archeologists, whether professional or amateur, object strenuously to digging by collectors and unqualified persons. This is understandable and, of course, justifiable, as improper digging may be just plain vandalism and may destroy important links in our prehistory. As we have stated many times in editorials, proper digging requires a good background knowledge of archeology and of the antiquity laws of the state or nation. Ordinarily the best practice is to notify the closest museum or college department of anthropology if the surface hunter finds a "burial."

The following article by Mr. Smith is a good description for the college student who will be eventually a qualified archeologist. It will also give the beginner knowledge of how the archeologist digs. The procedures given here may also be used by those amateurs or surface hunters in areas that may have been previously checked by archeologists and released by them, or in some cases in which the work of nearby road crews would not allow time for notification of proper authorities. By publication of this article, neither this magazine nor Mr. Smith

A properly excavated burial. It takes about eight hours' steady work to clean a skeleton up like this. This one was a protohistoric Erie Indian who lived on the Huron River in Ohio.

sanctions any unauthorized or promiscuous digging, or digging by unqualified persons. Ed.

No collection of Indian artifacts is really complete unless it includes at least one Indian, or rather what time has left of him or her. Nothing that the former possessors of our country left behind is of more scientific importance than their bones.

Now I will give a few directions as to how to recover a skeleton and have it in the best possible condition, as perfect as it was before you uncovered it.

When you discover a grave pit on your "dig," take your shovel and skim off the dry dirt, so that you can see the darker fill more easily. With your camera take a picture of your find. You can never take too many pictures on a dig. Remember you never have but the one chance to take pictures. You can always discard the one not needed. You can't take the one you wish you had taken, however, once the dig is over.

Spot the grave pit on your sketch of the pertinent square or squares. With your trowel sink a narrow trench across the pit about a third of the way from one end. Dig cautiously for you are going to hit bone. You should either strike the center of the long bones of the legs or the ribs. Once you find bone, and identify it, STOP. You know now at which end the skull is located. Put a folded gunny sack or a piece of heavy paper over the bone you uncovered. Take out the grave fill in about three-inch layers.

If you find an artifact, spot it on the

square map, and note the depth. (Sometimes the mourners tossed in something like a weapon, or a string of beads, or a pouch of paint, for future use by the occupant.)

The minute you get down to the bones STOP DIGGING. Clean out the sides of the grave. If you see the marks of the digging tool in the undisturbed soil, clean them out with brush and grapefruit knife and photograph. Dig down close to the sides of the grave a bit below the level of the bones so that they are in a block. Then cover them with gunny sacks or heavy paper, throw on a few handfuls of dirt to hold it down, and let it stay over night. You MUST dry these bones slowly.

The next day remove the covering. With your fingers, paintbrush, and grapefruit knife remove the dirt down to the bones. Do not try at this time to clean off the joints, or the hands, feet or face, but brush them clean.

If you find an artifact, let it lie until you are through, then photograph. Before you leave the dig pick up all artifacts and put a peg to mark the exact spot. Cover the bones as before and wait till the next day.

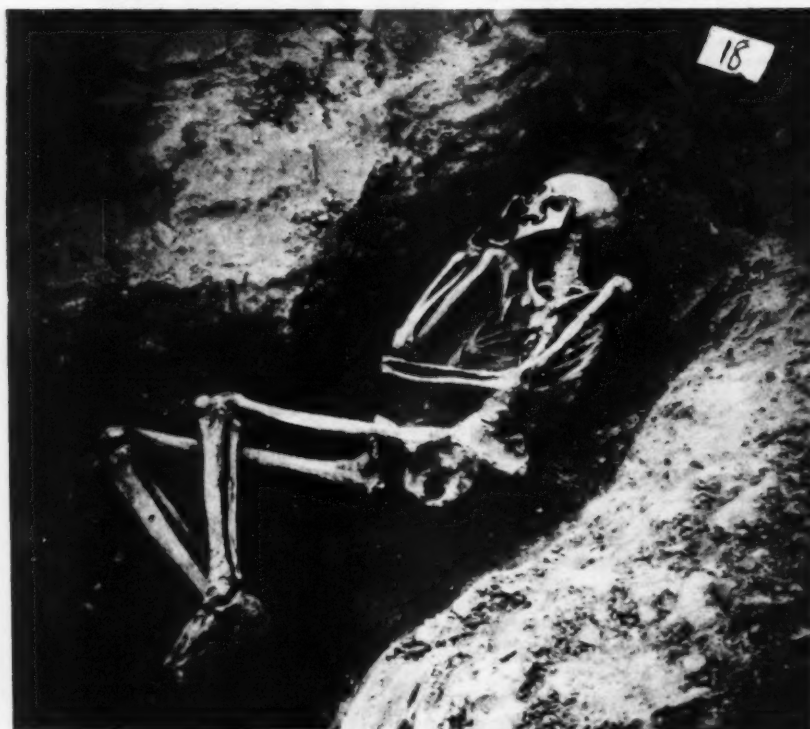
Bone that is as soft as cream cheese when first uncovered will dry out hard and firm. The joints are softer than the centers of the bones. That is why you must let them dry thoroughly before you start brushing and scraping around them. You may have to wait for several days before the bones are ready to finish the job.

Once they are dried thoroughly and the dirt is dry, brush them clean. Try not to touch the bones with steel as you carve away the last of the dirt. Undercut them as much as possible to bring them into good relief for photography.

If they are so stained that they are hard to see against the dirt, whiten them with chalk and water or showcard white. The last thing you do is to clean off the hands, feet, and the face. Wait until the ground is dry, and brush carefully, as these bones are tiny. Brush off the face, remembering that these bones are very thin and easily broken, and watch out for fallen teeth.

When you have your skeleton looking like the one in the picture on this page, take its picture. You can use reflectors of newspaper to throw the light, but the easy way is to use flash bulbs. Take more than one picture and take them from different angles.

If the soil is dry and sandy you can use water to wash the joints. This was done to the skeleton in the picture. Pour the water from a pan and be sure that you don't let the bones move. Note that the kneecaps are in place in the picture. This "burial" had only seven teeth in a sort of beartrap arrangement. Her left hand, which had been holding her right



elbow, was missing. No artifacts were found with this "burial."

After all pictures are taken, lift out the bones. Put the small bones of each hand and foot in a small labeled sack by themselves. Wrap the long bones in packing, and when you want to lift a bone that has much contact with the ground, cut under it before you lift. Wrap pelvic bones, and pack the skeleton so that it does not move around in the box and get damaged. Pick up the ribs and shoulder blades, but leave the vertebrae and skull till last. You can take up the vertebrae several at a time, and wrap them. Lastly, line a box and pad it. Using both hands, lift the skull and set it in the box with the jawbone. Then pad into place securely.

Clean the bones in your laboratory, even though that is but the kitchen sink.

After you have all the bones out, scrape off the floor of the grave to check if the soil underneath is disturbed. Sometimes there is an earlier grave under the one you just dug.

Many Indian skeletons show osteoarthritis so be careful when washing the joints and vertebrae that you do not break off the bony spines. When you are working the area between ribs and pelvis watch carefully for indications of diet, such as bits of bone, or hard seeds. I know one digger who found two immense kidney stones.

A female might have been pregnant and some of the tiny foetal bones may have survived. If any of this material is present it will be found at the very bottom of the grave or in the pelvic cavity. We know that some of the people of our highest cultures had repulsive table manners. They ate nestlings and small mammals like we eat strawberries. Feathers, fur, and broken bones have been recovered from faeces.

A surface hunter should check gravel pits and cut banks in his area regularly. If you are lucky and see a human bone protruding from the bank, don't pull it out. **LEAVE IT ALONE.** Before you do anything else, dig through any talus dirt below the bones for possible artifacts and bones. Then get on top of the bank and work down in the method outlined above.

I have explained the ideal way. Sometimes you do not have time. In that case, get the bones out as best you can. If time is really critical, as it would be if a road crew were right behind you, don't waste time searching through the soil. Shovel it into sacks when you get to the bones level. In fact if you find a bead or two, don't look for more in the field if they are mixed in the dirt. Bag the dirt and search it later.

Some of our eastern Indians buried corpses on a layer of clay and covered them with mats and another layer of clay. In dry weather the clay sets as

hard as brick. One of my friends recently dug such a grave. He just pried up the clay in chunks, the matting made a parting line. He took the chunks home and soaked them in water and in one of them he found a fine bone comb, in another he was able to recover a piece of cloth.

Now for trash pits: once you find one mark it on the map and put it on the proper square, in the proper size. Make notes of these things as well as sketches.

There are two ways to empty a trash pit. One is to dig down around one side leaving the dirt-filled pit standing. Then take it down in small layers, leaving half the pit so that you can spot any stratification in it. In emptying a pit save everything except the dirt. Save all bits of bone, fishbones, shells, and sherds. Work these over at home in the laboratory. Bag this stuff by level.

Watch out for seeds and fruit stones, charred corn, beans or other food remains. Often a pit was lined with bark, or with grass, and you can save samples. Don't forget fish scales either. You may not be able to tell one kind of fish scale from another but someone can. If there is a museum nearby ask someone how to take a pollen sample. Pollen yields information about the flora of the area at the time period involved. Pollen in the soil is almost indestructible. Every plant has a different shape pollen. Experts can tell the difference. You can get the samples for them to work on.

If you ever find what you thought was a grave, but find no bones, only an artifact or so, take a soil sample from underneath the grave. If a skeleton decayed in that pit, there will be phosphorus in the soil.

Remember that when you dig a site you destroy it, so you must be able to get all possible information from it while digging.

Very often the Indian buried the dead in trash pits. I think this was most often done in the winter when the ground was frozen too hard to dig. On site after site I have found burials in dug graves and burials of the same people doubled up and pushed down into a pit. I remember one burial in which the deceased had been doubled up, knees under chin and hands under chin, and placed head down in a pit that had a little charred corn in the bottom, and then he had been covered over with garbage scraped up around the pit. To me this was a very undignified way to spend a few centuries.

You often find matting in a pit, or a baby skeleton. Old human bones, if broken and split, MAY indicate cannibalism, but as a rule they are just bones unearthed in digging for graves or food caches.

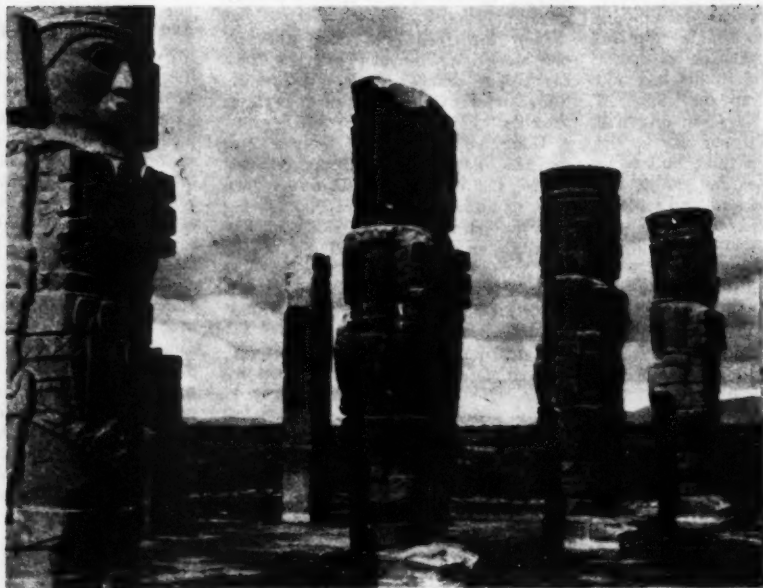
Next time I will give directions on taking soil samples, and pollen samples and

more instructions in the art of excavation. However it is like kissing a girl, no matter how many instructions you read on how to do it, a little actual practice is the best way to become skilled in the art.

Transparent Head

Now, for the first time, the study of the most complex organ, the human head, is made easy and inexpensive. Any anthropology student or hobbyist will be thrilled with this accurate, life size, take-apart anatomical model kit of the human head and neck. Amazingly low priced, yet it conforms to rigid laboratory standards. Precisely detailed, molded from an actual human skull. Teeth can be removed and examined. The ear can be easily disassembled to show internal structures. The eye comes apart to show lens, optic nerve, etc. Complete brain, spinal cord and organs of the mouth and throat are presented in vivid detail. The entire unit is molded in four colors and can be assembled and disassembled as desired. Included with it is a 16-page, fully illustrated medical handbook, free. Price, \$9.95, postpaid. Available from the Edmund Scientific Company, Barrington 56, New Jersey.





ANCIENT TULA AND THE TOLTECS

A few miles north and west of Mexico, D.F., lie the ruins of ancient Tollán or Tula, the capital of the Toltecs. At one time the Toltecs were erroneously identified with Teotihuacán, famous for its Pyramid of the Sun, among other things, but it has since been proved that the Teotihuacán flowered from A.D. 100 to about A.D. 900 when its capital was burned.

Tollán, on the other hand, started about 900 and flourished until about 1150 or 1180 when it, too, was destroyed.

The large figures shown above were once the pillars of the temple

to the Toltec gods, on top of the main pyramid at Tollán. When found within historical times, these pillars had been taken apart as far as possible and buried deep down in the top of the pyramid, presumably by a succeeding culture whose leaders were trying to destroy the ancient religion.

Now, partially restored and replaced by the Mexican government, they stand atop the pyramid as a reminder of this early but advanced people whose culture may have rivaled that of ancient Greece and Rome.

